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BY

F. B. WEEKS AND J. M. NICKLES



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40. On some fossils from northern Canada, collected by Commander Low, during the expedition of 1903-4, together with notes on the geological horizons to which they belong.—Abstract: Science, new ser., vol. 23, p. 973, June 29, 1906.

41. Preliminary lists of organic remains from the Chazy, Black River, Trenton, and Pleistocene formations comprised within the area of the Pembroke sheet (no. 122).—Geol. Survey of Canada, Appendix to Ells's Report on the Geology and Natural Resources of the northwest quarter-sheet, no. 122, pp. 47-71, 1907.

42. Bibliography of Canadian geology and paleontology for the year 1906.—Canada, Roy. Soc., Proc. and Trans., 3d ser., vol. 1, sect. 4, pp. 143-156, 1907.

43. Memorial of A. R. C. Selwyn.—Abstract: Science, new ser., vol. 25, pp. 763-764, May 17, 1907.

**Ami, Henry M., and Wilson, W. J.**

44. Report of the geological branch of the Ottawa Field-Naturalists' Club for 1905-6.—Ottawa Naturalist, vol. 19, no. 11, pp. 209-214, February, 1906.

Contains various notes on the geology and paleontology of Ontario.

**Anderson, G. E.**

45. Studies in the development of certain Paleozoic corals.—Jour. Geology, vol. 15, no. 1, pp. 59-69, 8 figs., 1907.

46. Development of the inner wall in Paleozoic corals.—Abstract: Science, new ser., vol. 25, p. 184, February 1, 1907.

**Anderson, Robert.**

47. Earth flaws at the time of the San Francisco earthquake.—Abstract: Science, new ser., vol. 25, p. 769, May 17, 1907.

Diatomaceous deposits of northern Santa Barbara County, Cal.—See Arnold and Anderson, no. 65.

Geology and oil resources of the Santa Maria oil district, Santa Barbara County, Cal.—See Arnold and Anderson, no. 67.

Metamorphism by combustion of the hydrocarbons in the oil-bearing shale of California.—See Arnold and Anderson, no. 68.

Preliminary report on the Santa Maria oil district, Santa Barbara County, Cal.—See Arnold and Anderson, no. 66.

**Anderson, Tempest.**

48. Recent volcanic eruptions in the West Indies.—Congr. géol. intern., C. R. 10<sup>e</sup> sess., Mexico, 1906, pp. 735-737, 13 pls., 1907.

**Andersson, J. G.**

49. Solifluction, a component of subaerial denudation.—Jour. Geology, vol. 14, no. 2, pp. 91-112, 5 figs., 1906.

Defines the term solifluction and describes the process of denudation so designated.

**Angermann, Ernesto.**

50. Explicación del plano geológico de la región de San Pedro de Gallo, Estado de Durango [Mexico].—Mexico, Inst. Geol., Parergones, t. 2, no. 1, pp. 5-14, 1 pl. (geol. map), 1907.

Describes the topography, and the occurrence, character, and relations of Jurassic, Cretaceous, and Tertiary strata.

**Angermann, Ernesto**—Continued.

51. Sobre la geología de la Bufo, Mapimí, Estado de Durango [Mexico].—Mexico, Inst. Geol., Parergones, t. 2, no. 1, pp. 17-25, 1 pl., 1 fig., 1907.

Describes the geologic structure, and the occurrence and relations of Cretaceous, Tertiary, and Quaternary deposits.

52. Notas geológicas sobre el Cretaceo en el Estado de Colima [Mexico].—Mexico, Inst. Geol., Parergones, t. 2, no. 1, pp. 29-35, 1 pl., 1907.

Describes the occurrence and relations of Cretaceous strata in the State of Colima, Mexico.

Anonymous papers. See page 208.

**Arey, Melvin E.**

53. Geology of Black Hawk County [Iowa].—Iowa Geol. Survey, vol. 16, pp. 407-452, 1 pl., 4 figs., geol. map, 1906.

Describes the topography and drainage, the stratigraphy, including Devonian rocks and glacial deposits, and the economic products.

**Argall, Philip.**

54. Report on the zinc mines of the east and west Kootenays.—Canada, Dept. of the Interior, Mines Branch, Rept. of the Commission to investigate the zinc resources of British Columbia, pp. 147-252, 51 pls., 32 figs., 1906.

Includes notes on the character, occurrence, and geologic horizon of the zinc ores.

**Armington, Howard C., and Stotesbury, Harold W.**

55. The Yak mining, milling, and tunneling company [Leadville, Colo.].—Colorado School of Mines, Bull., vol. 4, no. 1, pp. 71-88, 10 figs., 1907.

Includes an account of the local geology.

**Arnold, Ralph.**

56. Geological reconnaissance of the coast of the Olympic Peninsula, Washington.—Geol. Soc. America, Bull., vol. 17, pp. 451-468, 4 pls., 4 figs., 1906.

Notes briefly the literature bearing on the region and describes its physical features, the character, occurrence, and relations of Tertiary and older formations, and the general geologic structure.

57. The Tertiary and Quaternary pectens of California.—U. S. Geol. Survey, Prof. Paper no. 47, 264 pp., 53 pls., 2 figs., 1906.

Gives an account—nomenclature, definition, localities, and faunal lists—of the Tertiary and Pleistocene formations of California and systematic descriptions of the pectens.

58. Coal in the Mount Diablo Range, Monterey County, Cal.—U. S. Geol. Survey, Bull. no. 285, pp. 223-225, 1 fig., 1906.

Describes the geologic structure of the range, the relations of the coal bed, and the properties of the coal.

59. The Salt Lake oil field near Los Angeles, Cal.—U. S. Geol. Survey, Bull. no. 285, pp. 357-361, 1 fig., 1906.

Describes the geologic formations and structure of the area, and the economic developments.

60. New and characteristic species of fossil mollusks from the oil-bearing Tertiary formations of southern California.—U. S. Nat. Mus., Proc., vol. 32, pp. 525-546, 14 pls., June 15, 1907.

61. Dome structure in conglomerate.—Jour. Geology, vol. 15, no. 6, pp. 560-570, 8 figs., 1907.

Describes the structure of domes in conglomerate near Pasadena, Cal., and discusses the origin of dome structure.

62. Fossils of the oil-bearing formations of southern California.—U. S. Geol. Survey, Bull. no. 309, pp. 219-256, 17 pls., 1907.

Gives figures of characteristic species of fossils, chiefly Pelecypoda and Gastropoda from Tertiary horizons of southern California.

**Arnold, Ralph**—Continued.

63. Geology and oil resources of the Summerland district, Santa Barbara County, Cal.—U. S. Geol. Survey, Bull. no. 321, 93 pp., 17 pls., 3 figs., 1907.

64. The Santa Maria oil district, California.—Abstract: Science, new ser., vol. 25, p. 825, May 24, 1907.

The Santa Clara Valley, Puente Hills, and Los Angeles oil districts, southern California.—See Eldridge and Arnold, no. 779.

**Arnold, Ralph, and Anderson, Robert.**

65. Diatomaceous deposits of northern Santa Barbara County, Cal.—U. S. Geol. Survey, Bull. no. 315, pp. 438-447, 1907.

66. Preliminary report on the Santa Maria oil district, Santa Barbara County, Cal.—U. S. Geol. Survey, Bull. no. 317, 69 pp., 2 pls., 1 fig., 1907.

Describes the stratigraphy and structural conditions of the field and the economic developments.

67. Geology and oil resources of the Santa Maria oil district, Santa Barbara County, Cal.—U. S. Geol. Survey, Bull. no. 322, 161 pp., 26 pls., 1907.

68. Metamorphism by combustion of the hydrocarbons in the oil-bearing shale of California.—*Jour. Geology*, vol. 15, no. 8, pp. 750-758, 2 figs., 1907.

**Ashley, George Hall.**

69. Cannel coal in the United States.—*Min. World*, vol. 23, pp. 90-92, 381-383, 8 figs., 1905.

70. An area of faulting in central Pennsylvania.—Abstract: Science, new ser., vol. 23, p. 33, January 5, 1906.

71. Clearfield coal field, Pennsylvania.—U. S. Geol. Survey, Bull. no. 285, pp. 271-275, 1 fig., 1906.

Describes the geologic structure of the field and the character and occurrence of the coal beds.

72. Notes on clays and shales in central Pennsylvania.—U. S. Geol. Survey, Bull. no. 285, pp. 442-444, 1906.

Gives a general description of the clays and shales of the region and particularly of the flint-clay deposits.

73. The geological prelude to the San Francisco earthquake.—*Pop. Sci. Monthly*, vol. 69, no. 1, pp. 69-75, 6 figs., July, 1906.

Gives an account of the geologic structure and geologic history of California.

74. The maximum deposition of coal in the Appalachian coal field.—*Econ. Geology*, vol. 1, no. 8, pp. 788-793, 1906.

Gives data regarding the thickness of coal seams in various Appalachian fields, with the view of determining the time required for the formation of the coal beds.

75. The maximum rate of deposition of coals.—*Econ. Geology*, vol. 2, no. 1, pp. 34-47, 5 figs., 1907.

From the study of peat bogs and field study of coal basins endeavors to determine the rate of accumulation of coal.

76. Were the Appalachian and eastern interior coal fields ever connected?—*Econ. Geology*, vol. 2, no. 7, pp. 659-666, 1907.

The Punxsutawney and Glen Campbell coal fields of Indiana and Jefferson counties, Pa.—See Peck and Ashley, no. 1888.

Correlation of coals.—See White and Ashley, no. 2549.

**Ashley, George Hall, and Glenn, Leonidas Chalmers.**

77. Geology and mineral resources of part of the Cumberland Gap coal field, Kentucky.—U. S. Geol. Survey, Prof. Paper no. 49, 239 pp., 40 pls., 13 figs., 1906.

Describes the physiography, stratigraphy, and geological structure of the region, and in detail the occurrence, character, geological relations, and correlations of the coal seams.



**Ashworth, James.**

78. Notes on the Crows Nest coal field, British Columbia.—Manchester Geol. and Min. Soc., Trans., vol. 29, pt. 3, pp. 78-83, 1905; Can. Min. Rev., vol. 25, no. 5, pp. 165-167, December, 1905; Eng. and Min. Jour., vol. 81, pp. 711-712, April 14, 1906.

Gives notes upon the character of the coal field and upon the rock slide at Frank, Alberta.

**Atkin, Austin J. R.**

79. Some further considerations on the genesis of the gold deposits of Barkerville, British Columbia, and vicinity.—Geol. Mag., dec. 5, vol. 3, no. 11, pp. 514-516, 1 fig., November, 1906.

Discusses briefly the character, occurrence, and origin of these deposits.

**Atwood, Wallace W.**

80. Red Mountain, Arizona: a dissected volcanic cone.—Jour. Geology, vol. 14, no. 2, pp. 138-146, 6 figs., 1906.

Describes the volcanic material of which the cone consists, the relations of the deposits to one another, and the physiographic features and geologic history of the cone.

81. The glaciation of the Uinta Mountains.—Jour. Geology, vol. 15, no. 8, pp. 790-804, 4 figs., 1907.

**Aubury, Lewis E.**

82. Report of the State mineralogist [California].—California State Min. Bur., Rept. of Board of Trustees, pp. 13-17, 1902.

An administrative report.

83. Report of the State mineralogist [California].—California State Min. Bur., Rept. of Board of Trustees, pp. 9-14, 1904.

An administrative report.

84. Report of the State mineralogist [California].—California State Min. Bur., Rept. of Board of Trustees, pp. 8-19, 1906.

An administrative report.

85. The copper resources of California.—California State Min. Bur., Bull. no. 23, 282 pp., pls., figs., maps, 1902.

86. The quicksilver resources of California.—California State Min. Bur., Bull. no. 27, 273 pp., 50 pls., 94 figs., 8 maps, 1903.

87. The structural and industrial materials of California.—California State Min. Bur., Bull. no. 38, pp. 13-378, 149 figs., 1906.

**Ayres, W. S.**

88. Deutschman's cave, near Banff, British Columbia, Canada.—Am. Inst. Min. Eng., Bi-Mo. Bull., no. 13, pp. 93-112, 17 figs., January, 1907.

Describes the location, the character of the rocks in which it has been cut, the mode of its formation, and various features of the cave.

89. Report on the exploration of Deutschman cave [British Columbia].—Canada, Dept. of the Interior, Rept. Surveyor-General for 1906, pp. 117-120, 1907.

90. Supplementary report on the additional exploration of Deutschman cave [British Columbia].—Canada, Dept. of the Interior, Rept. Surveyor-General for 1906, pp. 121-126, 1 pl., 1907.

**Babcock, E. J.**

91. The uses and value of North Dakota clays.—North Dakota State Geol. Survey, 4th Bienn. Rept., pp. 191-243, 1 pl., 1906.

Clay and its properties, with special reference to North Dakota clays.—See Clapp and Babcock, no. 471.



Babcock, E. J., and Clapp, C. H.

92. Economic geology of North Dakota clays.—North Dakota State Geol. Survey, 4th Bienn. Rept., pp. 95-189, 8 pls., 1906.

Bagg, Rufus M., jr.

93. The minerals of Maguarichic [Mexico].—Eng. and Min. Jour., vol. 80, pp. 2-3, 4 figs., July 6, 1905.

Gives notes on the geology of the region, and the occurrence and character of selenite, fluorite, and calcite crystals.

94. Fault breccia veins in the Sierra Madre [Mexico].—Min. and Sci. Press, vol. 92, p. 125, 4 figs., February 24, 1906.

Discusses the origin of these mineral-bearing lodes.

Bailey, Gilbert E.

95. The saline deposits of California.—California State Min. Bur., Bull. no. 24, 216 pp., pls., figs., maps, 1902.

96. The desert: its resources, water supply, and development.—Min. World, vol. 23, no. 17, pp. 471-473, map, October 28, 1905.

Describes the physical features of the desert region of southern California, Nevada, and Arizona.

97. The borax deposits of California.—Min. World, vol. 24, no. 1, pp. 4-5, 7 figs., January 6, 1906.

Bailey, L. W.

98. The gypsum deposits of New Brunswick.—Canada, Roy. Soc., Proc. and Trans., 2d ser., vol. 12, sec. 4, pp. 3-14, 7 pls., 1906. Abstract: Science, new ser., vol. 23, pp. 971-972, June 29, 1906.

Describes the geologic occurrence and relations of the gypsum beds of New Brunswick, particularly those in the vicinity of Hillsborough, and discusses the origin of the gypsum deposits.

Bain, H. Foster.

99. Zinc and lead deposits of the upper Mississippi Valley.—U. S. Geol. Survey, Bull. no. 294, 155 pp., 16 pls., 45 figs., 1906; Wisconsin Geol. and Nat. Hist. Survey, Bull. no. 19, 155 pp., 45 figs., 18 pls. (in atlas), 1906.

Gives a historical sketch of the development of the field, describes the topography, stratigraphy, and geologic structure, the character, occurrence, and relations of the ore deposits, and the mining developments, and discusses the origin of the ores.

100. [The coals of Illinois].—Illinois State Geol. Survey, Bull. no. 3, pp. 9-19, 1 pl., 1906.

Gives various data regarding the coal fields of Illinois. Includes a geologic map showing the distribution of the coal measures.

101. A Nevada zinc deposit.—U. S. Geol. Survey, Bull. no. 285, pp. 166-169, 1906.

Describes the geologic structure of Spring Mountains, and the character and occurrence of the ore bodies, and discusses the origin of the ores.

102. The southeastern Illinois oil field.—Min. and Sci. Press, vol. 92, p. 326, May 19, 1906.

Describes the occurrence and character of oil in this area.

103. A persistent error.—Science, new ser., vol. 23, p. 919, June 15, 1906.

Calls attention to the misuse of the terms "Des Moines" and "Missourian" applied to coal measures of the western interior States.

104. Sedi-genetic and igneo-genetic ores.—Econ. Geology, vol. 1, no. 4, pp. 331-339, 1906.

Presents a classification of the metal production of the United States according to the mode of concentration of the ores, with a discussion of the data used.

**Bain, H. Foster**—Continued.

105. What should appear in the report of a state geologist?—Econ. Geology, vol. 1, no. 5, pp. 484-487, no. 7, pp. 702-705, 1906.

106. Some relations of paleogeography to ore deposition in the Mississippi Valley.—Congr. géol. intern., C. R. 10<sup>e</sup> sess., Mexico, 1906, pp. 483-499, 1907. Econ. Geology, vol. 2, no. 2, pp. 128-144, 1907.

Discusses concentration of metals in sedimentary rocks, and more especially the concentration of zinc and lead ores of the Mississippi Valley as affected by geographic conditions prevailing during Paleozoic sedimentation.

107. [Review of] Special report on lead and zinc, by E. Haworth and others (Kansas Univ. Geol. Survey, vol. 8).—Econ. Geology, vol. 2, no. 2, pp. 186-192, 1907.

108. The work of the [Illinois] State Geological Survey.—Western Soc. Engrs., Jour., vol. 12, pp. 233-239, April, 1907; Illinois Soc. Engrs. and Surveyors, 22d Ann. Rept., pp. 51-56, 1907.

109. Petroleum in Illinois.—Eng. and Min. Jour., vol. 83, pp. 755-756. 2 figs., April 20, 1907.

110. Administrative report for 1906.—Illinois State Geol. Survey, Bull. no. 4, pp. 9-35, 1 pl., 1907. [Also issued separately.]

Includes notes on economic resources.

111. Analysis of certain silica deposits.—Illinois State Geol. Survey, Bull. no. 4, pp. 185-186, 1907.

112. Contributions to the study of coal.—Illinois State Geol. Survey, Bull. no. 4, pp. 187-188, 1907.

113. The mineral industry in 1906 [Illinois].—Illinois State Geol. Survey, Bull. no. 4, pp. 245-246, 1907.

The production in the United States in 1905 of zinc and lead ores.—See no. 2418.

**Baker, H. P.**

114. The holding and reclamation of sand dunes and sand wastes by tree planting.—Iowa Acad. Sci., Proc., vol. 13, pp. 209-214, 1906.

Describes the origin of dunes.

**Baker, J. Willard.**

115. Monograph on meteorites.—Mineral Collector, vol. 12, no. 6, pp. 81-87, no. 7, pp. 97-103, 1905.

**Baker, M. B.**

116. Clay and the clay industry of Ontario.—Ontario, Bureau of Mines, Rept. 1906, vol. 15, pt. 2, 127 pp., 71 figs., 1906.

**Baldacci, L.**

117. Il giacimento solfifero della Louisiana. [The sulphur deposits of Louisiana.]—Italia, Ministero di Agricoltura, Industria e Commercio, Pubblicazioni del Corpo reale delle Miniere, Roma, Tipografia Nazionale di G. Bertero, 1906. 43 pp., 9 pls.

**Baldwin, A. L.**

The earth movements in the California earthquake of 1906.—See Hayford and Baldwin, no. 1114.

**Ball, Sydney H.**

118. Pre-Cambrian rocks of the Georgetown quadrangle, Colorado.—Am. Jour. Sci., 4th ser., vol. 21, pp. 371-389, May, 1906.

Describes the topography and general geology, and the occurrence, character, and relations of the pre-Cambrian formations.

Ball, Sydney H.—Continued.

119. Notes on ore deposits of southwestern Nevada and eastern California.—U. S. Geol. Survey, Bull. no. 285, pp. 53-73, 1 fig., 1906.

Describes the general geology, the occurrence and character of gold and silver ores, and the mining developments.

120. A geologic reconnaissance in southwestern Nevada and eastern California.—U. S. Geol. Survey, Bull. no. 308, 218 pp., 3 pls., 17 figs., 1907.

Describes the general stratigraphy of the area examined, the topography, structure, and stratified and igneous rocks of the various ranges, with notes on the character and occurrence of the economic minerals.

121. Copper deposits of the Hartville uplift, Wyoming.—U. S. Geol. Survey, Bull. no. 315, pp. 93-107, 1907.

122. The Hartville iron-ore range, Wyoming.—U. S. Geol. Survey, Bull. no. 315, pp. 190-205, 1 fig., 1907.

Describes the stratigraphy and geologic structure of the area, and the occurrence and origin of the iron ores.

123. Titaniferous iron ore of Iron Mountain, Wyoming.—U. S. Geol. Survey, Bull. no. 315, pp. 206-212, 1907.

124. Portland cement materials in eastern Wyoming.—U. S. Geol. Survey, Bull. no. 315, pp. 232-244, 2 figs., 1907.

125. Mica in the Hartville uplift, Wyoming.—U. S. Geol. Survey, Bull. no. 315, pp. 423-425, 1907.

126. Graphite in the Haystack Hills, Laramie County, Wyoming.—U. S. Geol. Survey, Bull. no. 315, pp. 426-428, 1907.

Bancroft, George J.

127. The formation and enrichment of ore-bearing veins.—Am. Inst. Min. Eng., Bi-Mo. Bull., no. 15, pp. 499-522, 1907.

128. Ore deposition.—Min. and Sci. Press, vol. 95, pp. 580-581, November 9, 1907.

Barbour, Erwin Hinckley.

129. Notice of a new fossil mammal from Sioux County, Nebraska.—Nebraska Geol. Survey, vol. 2, pt. 3, 4 pp., 1 pl., 1905.

Describes *Syndyoceras cooki* n. gen. and n. sp. from the Loup Fork beds at Agate, Nebraska.

130. Notice of a new fossil rhinoceros from Sioux County, Nebraska.—Nebraska Geol. Survey, vol. 2, pt. 4, pp. 311-318, 5 figs., 1906.

Describes *Diceratherium arikarense* from the Loup Fork beds.

131. Evidence of loess man in Nebraska.—Nebraska Geol. Survey, vol. 2, pt. 6, pp. 329-348, 16 figs., 1907.

132. Report on the Honey Creek coal mine.—Nebraska Geol. Survey, vol. 2, pt. 7, pp. 349-364, 7 figs., 1907.

133. Biennial report.—Nebraska Geol. Survey, vol. 2, pt. 8, pp. 365-387, 1907. An administrative report.

134. Report of the tenth geological expedition of Hon. Charles H. Morrill, season of 1905.—Science, new ser., vol. 23, pp. 114-115, January 19, 1906.

135. The skull of *Syndyoceras*.—Abstract: Science, new ser., vol. 23, pp. 288-289, February 23, 1906; Am. Assoc. Adv. Sci., Proc., vol. 55, pp. 378, 1906.

136. The skulls of *Syndyoceras* and *Protoceras*.—Abstract: Science, new ser., vol. 23, p. 623, April 20, 1906.

Barbour, Erwin Hinckley—Continued.

137. A workable bed of coal in Nebraska.—*Science*, new ser., vol. 24, pp. 51-52, July 13, 1906.

Notes the discovery of workable coal near Peru, Nebr., its character, and other occurrences of coal in Nebraska.

138. Notice of a new Miocene rhinoceros, *Dicratherium arikareense*.—*Science*, new ser., vol. 24, pp. 780-781, 2 figs., December 14, 1906.

139. Report on the geological expedition of Hon. Charles H. Morrill. Season of 1906.—*Science*, new ser., vol. 25, pp. 73-74, January 11, 1907.

140. Evidence of man in the loess of Nebraska.—*Science*, new ser., vol. 25, pp. 110-112, January 18, 1907.

Announces the discovery of human remains in undisturbed loess, detailing the circumstances and conditions of preservation.

141. Prehistoric man in Nebraska.—*Putnam's Monthly*, pp. 413-415, 502-503, 3 figs., January, 1907.

Describes the finding of human remains in undisturbed loess deposits.

Barbour, Erwin Hinckley, and Ward, Henry Baldwin.

142. Preliminary report on the primitive man of Nebraska.—*Nebraska Geol. Survey*, vol. 2, pt. 5, pp. 317-327, 4 figs., 1906.

Barker, F. L.

143. Structural geology at Leadville [Colorado].—*Mines and Minerals*, vol. 28, no. 5, pp. 220-222, 3 figs., December, 1907.

Describes the geological relations and occurrence of the ore deposits.

Barlow, Alfred Ernest.

144. Report on some of the undeveloped zinc deposits of British Columbia.—Canada, Dept. of the Interior, Mines Branch, Report of the Commission to investigate the zinc resources of British Columbia, pp. 273-293, 4 pls., 1906.

Includes notes on the geology of the area examined.

145. On the Quebec side of Lake Timiskaming.—Canada, Geol. Survey, Summ. Rept. for 1906, pp. 113-118, 1906.

Gives an account of the geology of the region.

146. On the nickel deposits of Webster, western North Carolina.—*Canadian Min. Inst., Jour.*, vol. 9, pp. 303-316, 1 pl. (map), 1906.

Describes the occurrence of the ores and their geological relations and origin.

147. On the origin and relations of the nickel and copper deposits of Sudbury, Ontario, Canada.—*Econ. Geology*, vol. 1, no. 5, pp. 454-466; no. 6, pp. 545-553, 1906.

Gives a historical résumé of the literature, and describes the character of the nickel-bearing eruptive rock, and the composition and mode of occurrence of the ore bodies.

Report of a special committee on the correlation of the pre-Cambrian rocks of the Adirondack Mountains, the "original Laurentian area" of Canada, and eastern Ontario.—See Adams and others. no. 13.

Barrell, Joseph.

148. Relative geological importance of continental, littoral, and marine sedimentation.—*Jour. Geology*, vol. 14, pp. 316-356, 430-457, 524-568, 10 figs., 1906.

Discusses the conditions under which continental, littoral, and marine deposits are formed and the criteria by which they may be discriminated, and applies these considerations to geologic history, particularly of pre-Paleozoic and Paleozoic sedimentation.



Carrell, Joseph—Continued.

149. Geology of the Marysville mining district, Montana: a study of igneous intrusion and contact metamorphism.—U. S. Geol. Survey, Prof. Paper no. 57, 178 pp., 16 pls., 9 figs., 1907.

Describes Algonkian and Tertiary deposits and igneous rocks and the geologic structure of the region, and discusses the contact and intrusive phenomena.

150. Origin and significance of the Mauch Chunk shale.—Geol. Soc. America, Bull., vol. 18, pp. 449-476, 4 pls., 1 fig., December, 1907. Abstract: Science, new ser., vol. 25, p. 766, May 17, 1907.

Describes the distribution and character of the Mauch Chunk formation and discusses the mode of formation of the shale.

151. Relations between climate and river deposits.—Abstract: Science, new ser., vol. 25, p. 766, May 17, 1907.

Barringer, Daniel Moreau.

152. Coon Mountain and its crater [Arizona].—Philadelphia Acad. Nat. Sci., Proc., vol. 57, pt. 3, pp. 861-886, 1906.

Discusses the origin of this "crater."

Barringer, Daniel Moreau, and Tilghman, B. C.

153. The geology of Coon Butte, Arizona.—Abstract: Science, new ser., vol. 24, pp. 370-371, September 21, 1906; Am. Assoc. Adv. Sci., Proc., vol. 56-57, p. 271, 1907.

Barus, Carl.

154. Vulcanism.—Science, new ser., vol. 24, pp. 400-403, September 28, 1906.

Discusses the bearing of certain physical facts upon theories of vulcanism.

155. Note on volcanic activity.—Am. Jour. Sci., 4th ser., vol. 24, pp. 483-484, December, 1907.

Bassler, Ray S.

156. A study of the James types of Ordovician and Silurian Bryozoa.—U. S. Nat. Mus., Proc., vol. 30, pp. 1-66, 7 pls., 1906.

Includes a short account of the classification of Ordovician strata in the vicinity of Cincinnati, Ohio.

157. The bryozoan fauna of the Rochester shale.—U. S. Geol. Survey, Bull. no. 292, 136 pp., 31 pls., 1906.

Discusses the distribution and correlation of Niagaran bryozoan faunas and gives systematic descriptions of the Bryozoa of the Rochester shales of New York and Ontario.

158. Cement and cement materials [of Virginia].—In Watson, T. L., Mineral Resources of Virginia, pp. 86-167, 10 pls., 14 figs., 1907.

New American Paleozoic Ostracoda. Notes and descriptions of upper Carboniferous genera and species.—See Ulrich and Bassler, no. 2412.

Bastin, Edson S.

159. Some unusual rocks from Maine.—Jour. Geology, vol. 14, no. 3, pp. 173-187, 2 figs., 1906.

Describes the occurrence and petrographic characters of prowersose, albite-pyroxene syenite, cortlandite, and porphyritic granite.

160. The lime industry of Knox County, Me.—U. S. Geol. Survey, Bull. no. 285, pp. 393-400, 3 figs., 1906.

Describes the distribution, utilization, general character, and mode of occurrence of the limestones of Knox County, Me.

161. Clays of the Penobscot Bay region, Maine.—U. S. Geol. Survey, Bull. no. 285, pp. 428-431, 1906.

Describes the distribution, age, origin, utilization, and composition.



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385. Register of mines and minerals, with map [of each of the following counties, issued separately]:

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386. Register of oil wells in Los Angeles County, with map, by Charles A. Blackmar, 13 pp., 1903.

The structural and industrial materials of California.—See Aubury, no 87.

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391. The iron ore of Shasta County, California.—Min. and Sci. Press, vol. 93, p. 603, 1 fig., Nov. 17, 1906.

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516. A new fossil ant.—Entomological News, vol. 17, no. 1, pp. 27-28, January, 1906.

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517. A new Tertiary *Planorbis*.—Nautilus, vol. 19, no. 9, pp. 100-101, January, 1906.

518. Fossil plants from Florissant, Colorado.—Torrey Bot. Club, Bull., vol. 33, no. 5, pp. 307-312, 6 figs., May, 1906.

519. A fossil water-bug.—Canadian Entomologist, vol. 38, no. 6, p. 209, June, 1906.

Gives a description of *Corixa florissantella* n. sp.

520. The fossil fauna and flora of the Florissant (Colorado) shales.—Colorado Univ., Studies, vol. 3, no. 3, pp. 157-175, 1 pl., 1906.

Gives an account of the character and occurrence of the fauna, discusses the evidence of the fossils as to the age of the deposits, and gives a classified, annotated summary of the fauna and flora. The plate contains figures of new species of plants described in the Bulletin of the Torrey Botanical Club, 1906.

521. Fossil Hymenoptera from Florissant, Colorado.—Harvard Coll., Mus. Comp. Zool., Bull., vol. 50, no. 2, pp. 33-58, 1906.

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522. A fossil Cicada from Florissant, Colorado.—Am. Mus. Nat. Hist., Bull., vol. 22, pp. 457-458, 1 fig., 1906.

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525. A new fly (fam. Mycetophilidæ) from the Green River beds.—Am. Jour. Sci., 4th ser., vol. 23, pp. 285-286, 1 fig., April, 1907.

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527. An enumeration of the localities in the Florissant basin, from which fossils were obtained in 1906.—Am. Mus. Nat. Hist., Bull., vol. 23, pp. 127-132, 2 figs., 1907.

528. Fossil dragon flies from Florissant, Colorado.—Am. Mus. Nat. Hist., Bull., vol. 23, pp. 133-139, 3 figs., 1907.

529. Some fossil arthropods from Florissant, Colorado.—Am. Mus. Nat. Hist., Bull., vol. 23, pp. 605-616, 6 figs., 1907.

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531. A fossil caterpillar [from the Miocene shales of Florissant, Colorado].—Canadian Entomologist, vol. 39, no. 6, pp. 187-188, June, 1907.

532. A fossil butterfly of the genus *Chlorippe*.—Canadian Entomologist, vol. 39, no. 11, pp. 361-363, 1 pl., November, 1907.

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533. A fossil Tortricid moth.—Canadian Entomologist, vol. 39, no. 12, p. 416, December, 1907.

Describes *Tortrix florissantana* n. sp. from the Miocene shales of Florissant, Colorado.

534. A fossil tsetse-fly in Colorado.—Nature, vol. 76, p. 414, August 22, 1907.

535. A Miocene wasp.—Nature, vol. 77, p. 80, November 28, 1907.

536. A new zonitoid shell from the Miocene, Florissant, Colorado.—Nautilus, vol. 21, no. 8, p. 89, December, 1907.

Describes *Vitrea fayalis* n. sp.

Coker, Ernest G.

An investigation into the elastic constants of rocks, more especially with reference to cubic compressibility.—See Adams and Coker, nos. 10, 11.

Experimental investigation of the compressibility and plastic deformation of certain rocks.—See Adams and Coker, no. 12.

Cole, A. D.

537. C. L. Herrick as a maker of scientific men.—Denison Univ., Sci. Lab., Bull., vol. 13, art. 1, pp. 1-13, 1 pl. (port.), 1905.

Coleman, Arthur P.

538. Durham County: geological features.—First Report of the Bureau of Archives for the Province of Ontario, 1903, pp. 46-47, 1 fig., 1904.

539. The Sudbury nickel field.—Ontario, Bur. Mines, Rept., 1905, vol. 14, pt. 3, 188 pp., illus., 1905.

Describes the general geology, the occurrence, character, and relations of the ore deposits, and the character and distribution of eruptive rocks, of Huronian sediments, and of Pleistocene deposits, and gives an account of the petrography of the nickel eruptive, of the economic developments of the field, and of the minerals found in the Sudbury nickel district of Ontario.

Coleman, Arthur P.—Continued.

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541. The Helen iron mine, Michipicoten.—*Econ. Geology*, vol. 1, no. 6, pp. 521-529, 4 figs., 1906.

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542. Iron ranges of eastern Michipicoten.—*Ontario, Bur. Mines, Rept.*, 1906, vol. 15, pt. 1, pp. 173-199, 13 figs., 1 map, 1906.

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543. Magmatic segregation of sulphide ores.—*Abstract: British Assoc. Adv. Sci., Rept. 75th meeting*, p. 400, 1906.

544. A lower Huronian ice age.—*Am. Jour. Sci.*, 4th ser., vol. 23, pp. 187-192, March, 1907. *Abstract: Science, new ser.*, vol. 25, p. 769, May 17, 1907.

After referring briefly to evidence for ice ages prior to the glacial period, describes the Huronian "slate conglomerate" of Ontario, and striated boulders taken therefrom, and discusses the evidence for a lower Huronian ice age.

545. The need of field work in the study of ore genesis.—*Eng. and Min. Jour.*, vol. 83, pp. 295-296, February 9, 1907.

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547. Interglacial periods in Canada.—*Gongr. géol. intern., C. R. 10<sup>e</sup> sess.*, Mexico, 1906, pp. 1237-1258, 1907.

548. Iron ranges east of Lake Nipigon.—*Ontario, Bur. Mines, 16th Ann. Rept.*, vol. 16, pt. 1, pp. 105-135, 15 figs., 1907.

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549. Die Sudbury-Nickelerze.—*Zeitschr. f. prak. Geol.*, Jg. 15, p. 221, 1907.

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Collen, M.

550. Copper deposits in the Belt formation in Montana.—*Econ. Geol.*, vol. 2, no. 6, pp. 572-575, 1907.

Colles, George Wetmore.

551. Mica and the mica industry.—*Franklin Inst., Jour.*, vol. 161, no. 1, pp. 43-58, 5 figs., January, 1906; no. 2, pp. 81-100, 6 figs., February, 1906. Reprinted in book form: *The Franklin Institute, Philadelphia*, 1906. 130 pp., 36 figs.

Collier, Arthur J.

552. Geology and coal resources of the Cape Lisburne region, Alaska.—*U. S. Geol. Survey, Bull. no. 278*, 54 pp., 9 pls., 8 figs., 1906.

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553. Ore deposits in the St. Joe River basin, Idaho.—*U. S. Geol. Survey, Bull. no. 285*, pp. 129-139, 1 pl., 1 fig., 1906.

Describes the geography, drainage, and geology of the area, and the occurrence and character of the mineral resources.



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554. Gold-bearing river sands of northeastern Washington.—U. S. Geol. Survey, Bull. no. 315, pp. 56-70, 1907.

Describes the general geology and geologic history of the region, the occurrence of gold-bearing placers, and their relation to the terraces.

555. The Arkansas coal field.—U. S. Geol. Survey, Bull. no. 316, pp. 137-160, 1 pl., 1907.

556. The Arkansas coal field. With reports on the paleontology by David White and G. H. Girty.—U. S. Geol. Survey, Bull. no. 326, 1907. 158 pp., 6 pls., 29 figs.

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558. A prospecting shaft in the Goldfield district, Goldfield, Nevada.—Inst. Min. and Metall., Trans., vol. 15, pp. 540-542, 1906.

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559. Notes on the wollastonite rock mass, and its associated minerals, of the Santa Fé mine, State of Chiapas, Mexico.—Min. Mag., vol. 13, pp. 356-362, December, 1903.

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560. [Report on] the Lake Superior region between the Pic and Nipigon rivers.—Canada, Geol. Survey, Summ. Rept. for 1905, pp. 80-82, 1906.

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561. On surveys along the National Transcontinental Railway location between Lake Nipigon and Lac Seul.—Canada Geol. Survey, Summ. Rept. for 1906, pp. 103-109, 1906.

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Colorado. State Bureau of Mines.

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563. Geological notes.—Southern California Acad. Sci., Bull., vol. 1, pp. 74-77, 1902.

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566. Observations on glacial accumulations of Nebraska.—Abstract: Science, new ser., vol. 23, p. 620, April 20, 1906.

567. Oil and gas possibilities in Nebraska.—Abstract: Science, new ser., vol. 23, p. 621, April 20, 1906.

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570. Geology and water resources of the Republican River Valley and adjacent areas, Nebraska.—U. S. Geol. Survey, W.-S. and Irrig. Paper, no. 216, 71 pp., 13 pls., 3 figs., 1907.

571. Opening of the Indian Territory.—Am. Geog. Soc., Bull., vol. 39, no. 6, pp. 321-340, 9 figs., June, 1907.

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Connecticut, State Geological and Natural History Survey.

573. Second biennial report of the commissioners, 1905-1906. Hartford, Press, 1906. 23 pp.

An administrative report.

Cook, C. W.

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Cooper, W. F.

575. Geological report on Bay County [Michigan].—Michigan State Bd. of Geol. Survey, Ann. Rept., 1905, pp. 135-426, 17 pls., 1906.

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577. The Nonesuch sandstone.—Eng. and Min. Jour., vol. 82, p. 778, 1 fig., October 27, 1906.

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Corkill, E. T.

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581. Natural gas and petroleum [in Ontario].—Ontario, Bur. Mines, Rept. 1906, vol. 15, pt. 1, pp. 108-115, 1906.

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584. The Cobalt mining district.—Eng. and Min. Jour., vol. 82, pp. 5-6, 5 figs., July 7, 1906.

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586. Gold in Michigan.—Michigan State Board of Geol. Survey, Rept. for 1906, pp. 581-584, 1907.

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Craig, E. H. Cunningham.

588. Geological structure of Trinidad.—Imperial Inst., Bull., vol. 5, no. 2, pp. 175-179, 1907.

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589. The coals of the Big Sandy Valley, south of Louisa and between Tug Fork and the headwaters of the north fork of Kentucky River.—Kentucky Geol. Survey, Bull. no. 4, 141 pp., 30 pls., 1905.

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Crandall, Roderic.

590. The Cretaceous stratigraphy of the Santa Clara Valley region in California.—Am. Jour. Sci., 4th ser., vol. 24, pp. 33-54, 3 figs., July, 1907.

Describes the occurrence of Cretaceous formations and gives lists of the fossils found in different exposures.

591. The geology of the San Francisco Peninsula.—Am. Philos. Soc., Proc., vol. 46, no. 185, pp. 3-58, 1 pl. (map), 3 figs. and sections, 1907.

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Crane, W. R.

592. Asphaltic coals in the Indian Territory: forms of the deposits, methods of prospecting and mining.—Mines and Minerals, vol. 26, no. 6, pp. 252-254, 6 figs., January, 1906.

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Crane, W. R.—Continued.

593. Lead and zinc mining in the Quapaw district, Oklahoma.—*Mines and Minerals*, vol. 27, no. 9, pp. 445-446, 1 fig., May, 1907.

Describes the character and occurrence of the ores.

Crespi, R. A.

594. Geology and development of Aguacate mines, Costa Rica.—*Min. World*, vol. 27, pp. 847-848, November 9, 1907.

Crider, A. F.

595. Geology and mineral resources of Mississippi.—U. S. Geol. Survey, Bull. no. 283, 99 pp., 4 pls., 5 figs., 1906.

Describes the occurrence, character, and relations of Devonian, Mississippian, Cretaceous, Tertiary, and Quaternary formations, and the mineral resources, mainly clays and cement materials.

596. Clays of western Kentucky and Tennessee.—U. S. Geol. Survey, Bull. no. 285, pp. 417-427, 1 pl., 1906.

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597. Drainage of wet lands in Arkansas by wells.—U. S. Geol. Survey, W.-S. and Irrig. Paper no. 160, pp. 54-58, 1 fig., 1906.

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Crider, A. F., and Johnson, L. C.

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Crook, Alja Robinson.

600. The making of the Grand Canyon of the Colorado.—*Pop. Sci. Monthly*, vol. 69, pp. 417-424, 7 figs., November, 1906.

Crosby, William O.

The limestone-granite contact deposits of Washington Camp, Arizona.—*Am. Inst. Min. Eng., Trans.*, vol. 36, pp. 626-646, 1906 (*Bi-Mo. Bull.* no. 6, pp. 1217-1238, 1905).—See Crosby, 16, page 78 of *Bulletin* no. 301, U. S. Geol. Survey.

601. Ore deposits of the eastern gold belt of North Carolina.—*Tech. Quart.*, vol. 20, no. 3, pp. 280-286, September, 1907.

Describes the general geology, the genetic and structural relations of the gold-bearing formations, and mining developments.

602. Volcanic action in Alaska.—*Science*, new ser., vol. 26, p. 78, July 19, 1907.

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603. Prowersose (syenitic lamprophyre) from Two Buttes, Colorado.—*Jour. Geology*, vol. 14, no. 3, pp. 165-172, 1906.

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604. Stratigraphic results of a reconnaissance in western Colorado and eastern Utah.—*Jour. Geology*, vol. 15, no. 7, pp. 634-679, 11 figs., 1907.

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Cross, Whitman—Continued.

605. Memoir of George H. Eldridge [1854-1905].—Geol. Soc. America, Bull., vol. 17, pp. 681-687, 1907.

Gives also a list of his publications.

606. Methods of igneous intrusion.—Abstract: Science, new ser., vol. 25, pp. 621-622, April 19, 1907.

Glacial phenomena of the San Juan Mountains, Colorado.—See Howe and Cross, no. 1247.

Cross, Whitman, Howe, Ernest, and Irving, J. D.

607. Description of the Ouray quadrangle [Colorado].—U. S. Geol. Survey, Geol. Atlas of U. S., folio no. 153, 20 pp., 4 figs., 2 maps, structure-section and illustration sheets, 1907.

Describes the topography, the character, occurrence, and relations of Algonkian, Devonian, Carboniferous, Triassic, Cretaceous, Tertiary, and Quaternary deposits, and of igneous surface and intrusive rocks, geologic structure and history, and the economic resources, chiefly gold, silver, and coal.

Cross, Whitman, Iddings, J. P., Pirsson, L. V., Washington, H. S.

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610. Description of the Bryozoa of the Salem limestone of southern Indiana.—Indiana, Dept. Geol. and Nat. Res., 30th Ann. Rept., pp. 1274-1296, illus., 1906.

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Curtis, George Carroll.

613. Looking into the Caribbean craters. A personal narrative of ascents to the active craters of La Soufrière and Pelée.—The Century Magazine, vol. 65, no. 3, pp. 420-434, 10 figs., January, 1903.

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614. Geology of the Long Lake quadrangle.—New York State Mus., Bull. 115, pp. 451-531, 20 pls., 2 figs., geol. map, 1907.

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615. How faults should be named and classified.—Econ. Geology, vol. 2, no. 4, pp. 433-435, 1 fig., June, 1907.

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Cushman, Joseph A.

618. Types in the paleontological collections of the Boston Society of Natural History.—Boston Soc. Nat. Hist., Proc., vol. 33, no. 6, pp. 249-275, May, 1907.

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620. The geological history of Mount Greylock [Massachusetts]. Pittsfield, Massachusetts, 1906. 17 pp., 5 figs.

621. Slate deposits and slate industry of the United States.—U. S. Geol. Survey, Bull. no. 275, 154 pp., 25 pls., 15 figs., 1906.

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622. Note on a new variety of Maine slate.—U. S. Geol. Survey, Bull. no. 285, pp. 449-450, 1906.

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623. The granites of Maine. With an introduction by George Otis Smith.—U. S. Geol. Survey, Bull. no. 313, 202 pp., 14 pls., 39 figs., 1907.

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Describes the character and occurrence of slates in various States.

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626. Biographical memoir of Charles Emerson Beecher, 1856-1904. (Read before the National Academy of Sciences, November 16, 1904.) Washington, 1906.—[Nat. Acad. Sci., Biog. Mem., vol. 6], pp. 57-70, 1 pl. (port.).

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627. Note on the genus *Psilocochlis* Dall.—Nautilus, vol. 20, no. 11, p. 128, March, 1907.

628. On climatic conditions at Nome, Alaska, during the Pliocene, and on a new species of *Pecten* from the Nome gold-bearing gravels.—Am. Jour. Sci., 4th ser., vol. 23, pp. 457-458, 1 fig., June, 1907.

629. A review of the American Volutidae.—Smithsonian Misc. Coll., vol. 48 (Quart. Issue, vol. 3, pt. 3), pp. 341-373, 1907.

630. Notes on some upper Cretaceous Volutidae, with descriptions of new species and a revision of the groups to which they belong.—Smithsonian Misc. Coll., vol. 50 (Quart. Issue, vol. 4, pt. 1), pp. 1-23, 13 figs., 1907.

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631. The differentiation of a secondary magma through gravitative adjustment.—Festschrift Harry Rosenbusch, E. Schweizerbartsche Verlagsbuchhandlung, Stuttgart, 1906, pp. 203-233, 2 figs.

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632. The Okanagan batholith of the Cascade Mountain system.—*Geol. Soc. America, Bull.*, vol. 17, pp. 329-376, 14 figs., 1906.

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633. Abyssal igneous injection as a causal condition and as an effect of mountain building.—*Am. Jour. Sci.*, 4th ser., vol. 22, pp. 195-216, 3 figs., September, 1906. Abstract: *Science*, new ser., vol. 24, pp. 367-368, September 21, 1906.

634. The nomenclature of the North American Cordillera between the 47th and 53d parallels of latitude.—*Geog. Jour.*, vol. 27, no. 6, pp. 586-606, 1 fig., June, 1906.

635. Report on field operations in the geology of the mountains crossed by the international boundary (49th parallel).—Canada, Dept. of the Interior, Rept. of the Chief Astronomer (pt. IX of the Ann. Dept. Rept. for 1905), pp. 278-283, 1906.

Includes notes on the geologic structure and stratigraphy. Discusses the occurrence of oil in Alberta.

636. The limeless ocean of pre-Cambrian time.—*Am. Jour. Sci.*, 4th ser., vol. 23, pp. 93-115, February, 1907.

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**2187.** The physiography of Calvert County [Maryland].—Maryland Geol. Survey, Calvert County, pp. 55-65, 2 pls., 1907.

**2188.** The geology of Calvert County [Maryland].—Maryland Geol. Survey, Calvert County, pp. 67-121, 6 pls., 7 figs., 1907.

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**2193.** Description of the Patuxent quadrangle [Maryland-District of Columbia].—U. S. Geol. Survey, Geol. Atlas of U. S., folio no. 152, 12 pp., 2 figs., 3 maps, and columnar-section sheet, 1907.

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**Sheridan, Jo E.**

**2195.** Report of the mine inspector for the Territory of New Mexico to the Secretary of the Interior for the year ended June 30, 1906. Washington, Government Printing Office, 1906. 87 pp.

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2198. The Lefroy, a parasitic glacier.—Abstract: Geol. Soc. America, Bull., vol. 17, pp. 707-708, 1907.

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2207. Gypsum of the Uncompahgre region, Colorado.—U. S. Geol. Survey, Bull. no. 285, pp. 401-403, 1 fig., 1906.

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2208. Gypsum deposits of the Laramie district, Wyoming.—U. S. Geol. Survey, Bull. no. 285, pp. 404-405, 1906.

Describes the occurrence and character of deposits of rock gypsum and gypsite.

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2210. Notes on glaciation in the Sangre de Cristo Range, Colorado.—Jour. Geology, vol. 15, no. 1, pp. 15-22, 6 figs., 1907.

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2211. Coal of Laramie basin, Wyoming.—U. S. Geol. Survey, Bull. no. 316, pp. 261-263, 1907.

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2213. Some Edentate-like remains from the Mascall beds of Oregon.—California Univ., Dept. Geol., Bull., vol. 5, no. 2, pp. 65-66, 3 figs., 1906.

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2218. Geology and mineral resources [of South Carolina].—Handbook of South Carolina, chapter 5, pp. 77-145, illus., South Carolina, State Dept. of Agriculture, Commerce, and Immigration, 1907.

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2224. The overlap of the St. Stephens limestone on the lower Tertiary formations in Crenshaw and Pike counties, Ala.—Abstract: Science, new ser., vol. 23, pp. 287-288, February 23, 1906.

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2226. On some post-Eocene and other formations of the Gulf region of the United States.—*Science*, new ser., vol. 23, pp. 481-491, March 30, 1906.

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2227. Sketch of the mineral resources of Alabama.—In "The Alabama Opportunity," published by the [Alabama] Department of Agriculture and Industries, pp. 169-184 [1906].

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2237. Relations of Geological Survey to mining industry.—*Min. World*, vol. 27, pp. 924-926, November 23, 1907.

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2241. Description of the Penobscot Bay quadrangle [Maine].—U. S. Geol. Survey, Geol. Atlas of U. S., folio no. 149, 14 pp., 2 maps and structure-section sheet, 1907.

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**Smith, James Perrin.**

2242. The paragenesis of the minerals in the glaucophane-bearing rocks of California.—Am. Philos. Soc., Proc., vol. 45, pp. 183-242, 1906.

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2243. The stratigraphy of the western American Trias.—Festschrift, Adolf v. Koenen, E. Schweizerbartsche Verlagsbuchhandlung, Stuttgart, pp. 377-434, 1 pl., 1907.

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**Smith, Leonard S.**

2244. Water powers of northern Wisconsin.—U. S. Geol. Survey, W.-S. and Irrig. Paper no. 156, 145 pp., 5 pls., 5 figs., 1906.

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**Smith, Philip S.**

2245. Gold fields of the Solomon and Niukluk River basins [Alaska].—U. S. Geol. Survey, Bull. no. 314, pp. 146-156, 1907.

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2247. The gray iron ores of Talladega County, Ala.—U. S. Geol. Survey, Bull. no. 315, pp. 161-184, 1907.

**Smith, T. Elliott.**

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**Smith, W. S. Tangier.**

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**Smith, Warren D.**

2252. Discussion of paper by Marius R. Campbell: Hypothesis to account for the transformation of vegetable matter into different grades of coal.—Econ. Geology, vol. 1, no. 6, pp. 581-583, 1906.

**Smith, William S.**

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Smyth, Henry Lloyd.

2254. The relations between gold and pyrite.—*Min. and Sci. Press*, vol. 93, pp. 58-59, 4 figs., July 14, 1906.

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**2392.** Description of a new genus and species of fossil seal from the Miocene of Maryland.—U. S. Nat. Mus., Proc., vol. 30, pp. 835-840, 2 pls., 1906.

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**2394.** Observations on the type specimen of the fossil cetacean *Anoplouassa forcipata* Cope.—Harvard Coll., Mus. Comp. Zool., Bull., vol. 51, no. 4, pp. 97-106, 3 pls., 1907.

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**2396.** Cement plaster industry in Wyoming.—Min. World, vol. 26, p. 387, 4 figs., March 23, 1907.

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2401. Faulting in the Red Cloud mine [Idaho].—*Min. and Sci. Press*, vol. 95, pp. 747-748, 3 figs., December 14, 1907.

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2403. San Francisco's great disaster.—Philadelphia, P. W. Ziegler Co., 1906. 424 pp., illus.

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2405. Vein formation at Cobalt, Ontario.—*Canadian Min. Jour.*, vol. 28, no. 12 (new ser., vol. 1, no. 10), pp. 301-303, 3 figs., August 1, 1907.

2406. Concentration of gold in the Klondike.—*Econ. Geology*, vol. 2, no. 4, pp. 343-349, 2 figs., June, 1907; *Canadian Min. Jour.*, vol. 28, no. 15 (new ser., vol. 1, no. 13), pp. 403-405, 4 figs., September 15, 1907.

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2407. The origin of the small sand mounds in the Gulf coast country.—*Science*, new ser., vol. 23, pp. 849-851, June 1, 1906.

Describes occurrence and character of these mounds and suggests hypotheses for their explanation.

2408. Report on a geological survey of the lands belonging to the New York and Texas Land Company (Ltd.), in the upper Rio Grande embayment in Texas.—Augustana Library Publications, Rock Island, Ill., no. 6, pp. 51-107, 7 pls., 1 map, 1907.

2409. A sketch of the geology of the Chisos country, Brewster County, Texas.—*Univ. of Texas, Bull.* no. 93 (Sci. ser. no. 11), 101 pp., April 15, 1907.

Describes the physiography of the region, the occurrence, character, relations, and economic value of Ordovician, Carboniferous, Cretaceous, and Tertiary strata, and of igneous rocks, the geologic structure and history, and the mineral resources, particularly quicksilver and coal.

Udden, Jon A.

2410. The Delafield drill core [Illinois].—*Illinois State Geol. Survey, Bull.* no. 4, pp. 203-211, 1907.

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Ulrich, Edward Oscar.

2411. Systematic paleontology of the Pleistocene deposits of Maryland: Molluscoidea.—*Maryland Geol. Survey, Pliocene and Pleistocene*, pp. 210-212, 2 figs., 1906.

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2412. New American Paleozoic Ostracoda. Notes and descriptions of upper Carboniferous genera and species.—U. S. Nat. Mus., Proc., vol. 30, pp. 149-164, 1 pl., 1906.

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2413. The evolution of the horse.—Delaware County Institute of Science, vol. 2, no. 4, pp. 115-127, 2 figs., July, 1907; Sci. Am. Suppl., vol. 64, pp. 412-414, 5 figs., December 28, 1907.

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2414. Areal geology of the lower Clear Creek (Colorado).—Colorado Univ., Studies, vol. 3, no. 4, pp. 263-376, 5 figs., 1906; Colorado Sci. Soc., Proc., vol. 8, pp. 103-122, 5 figs., 1906.

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Upham, Warren.

2415. Quaternary history of the upper Mississippi Valley.—Abstract: Geol. Soc. America, Bull., vol. 17, pp. 725-726, 1907.

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2416. Soil survey field book. Field season, 1906. 319 pp.

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Field operations of the Bureau of Soils.—See Whitney, nos. 2570, 2571.

U. S. Geological Survey.

2417. The San Francisco earthquake and fire of April 18, 1906, and their effects on structures and structural materials.—U. S. Geol. Survey, Bull. no. 324, 170 pp., 57 pls., 2 figs., 1907.

Contains the following papers:

Preface, by Joseph A. Holmes, pp. xi-xii.

The earthquake as a natural phenomenon, by G. K. Gilbert, pp. 1-13.

The effects of the earthquake and fire on various structures and structural materials, by Richard L. Humphrey, pp. 14-61.

The effects of the earthquake and fire on buildings, engineering structures, and structural materials, by John S. Sewell, pp. 62-130.

The earthquake and fire and their effects on structural steel and steel-frame buildings, by Frank Soulé, pp. 131-158.

List of papers relating to the earthquake and fire, pp. 159-161.

2418. Mineral resources of the United States, calendar year 1905, 1403 pp., 1906.

Contains the following papers, largely statistical in character, relating to the production, condition of the industry, etc., but also in some cases containing notes on the geology and occurrence of the products treated:

Mineral products of the United States in 1904 and 1905, pp. 23-41.

Value, by States, of mineral products in 1905, by Wm. Taylor Thom, pp. 42-52.

(Metals.)

Antimony, by C. C. Schnatterbeck, pp. 435-439.

Bismuth, by C. C. Schnatterbeck, pp. 441-443.

Copper, by Charles Kirchhoff, pp. 343-362.

Gold and silver, by Waldemar Lindgren and others, pp. 113-341.

Production in the United States, by Waldemar Lindgren, pp. 113-127.

Alaska, by Alfred H. Brooks, pp. 127-134.

Arizona, by V. C. Heikes, pp. 134-162.

California, by Charles G. Yale, pp. 162-185.

Colorado, by Waldemar Lindgren, pp. 185-214.

Idaho, by V. C. Heikes, pp. 214-242.

Montana, by Alexander N. Winchell, pp. 242-259.

Nevada, by Charles G. Yale, pp. 259-275.

## U. S. Geological Survey—Continued.

## Gold and silver—Continued.

- New Mexico, by Waldemar Lindgren, pp. 275-284.  
 Oregon, by Charles G. Yale, pp. 284-293.  
 South Dakota, by Waldemar Lindgren, pp. 293-297.  
 Southern Appalachian States, including Alabama, Georgia, Maryland, North Carolina,  
 South Carolina, and Tennessee, by Waldemar Lindgren, pp. 297-304.  
 Texas, by Waldemar Lindgren, pp. 304-305.  
 Utah, by V. C. Heikes, pp. 305-331.  
 Washington, by Charles G. Yale, pp. 331-337.  
 Wyoming, by Waldemar Lindgren, pp. 337-341.  
 Iron ores, by John Birkinbine, pp. 53-87.  
 Lead, by Charles Kirchhoff, pp. 363-370.  
 Manganese ores, by John Birkinbine, pp. 87-111.  
 Platinum, by F. W. Horton, pp. 423-434.  
 Quicksilver, by F. W. Horton, pp. 393-404.  
 Silver. See Gold and silver.  
 Steel-hardening metals, by Joseph Hyde Pratt, pp. 405-421.  
 Tin, by Frank L. Hess, pp. 445-451.  
 Zinc, by Charles Kirchhoff, pp. 371-377.  
 Zinc and lead ores, by H. Foster Bain, pp. 379-392.

## (Fuels.)

- Coal, by Edward W. Parker, pp. 453-714.  
 Coke, by Edward W. Parker, pp. 715-766.  
 Gas, coke, tar, and ammonia at gas works and in retort coke ovens, by Edward W.  
 Parker, pp. 767-797.  
 Natural gas, by W. T. Griswold, pp. 799-812.  
 Petroleum, by W. T. Griswold, pp. 813-920.

## (Structural materials.)

## Cement:

- Advance in cement technology, by Edwin C. Eckel, pp. 921-923.  
 Statistics of cement industry, by L. L. Kimball, pp. 924-944.  
 Clay-working industries, by Jefferson Middleton, pp. 945-1002.  
 Lime and sand-lime brick, by Edwin C. Eckel, pp. 1003-1006.  
 Sand and gravel, by A. T. Coons, pp. 1007-1010.  
 Slate, pp. 1011-1020.  
 Stone industry, by A. T. Coons, pp. 1021-1067.

## (Abrasive materials.)

- Abrasive materials, by Joseph Hyde Pratt, pp. 1069-1085.

## (Chemical materials.)

- Arsenious oxide, by C. C. Schnatterbeck, pp. 1087-1089.  
 Borax, by Charles G. Yale, pp. 1091-1096.  
 Bromine, by Frederick J. H. Merrill, pp. 1097-1098.  
 Fluorspar and cryolite, by Edmund Otis Hovey, pp. 1099-1103.  
 Gypsum and gypsum products, by Edwin C. Eckel, pp. 1105-1115.  
 Phosphate rock, by Edmund Otis Hovey, pp. 1117-1126.  
 Salt, by Edmund Otis Hovey, pp. 1127-1135.  
 Sulphur and pyrite, pp. 1137-1143.  
 Barytes, pp. 1145-1146.  
 Mineral paints, pp. 1147-1154.

## (Miscellaneous.)

- Asbestos, by George Otis Smith, pp. 1155-1159.  
 Asphaltum and bituminous rock, by Edmund Otis Hovey, pp. 1161-1169.  
 Bauxite and aluminum, pp. 1171-1174.  
 Black sands, by David T. Day and R. H. Richards, pp. 1175-1258.  
 Carbon dioxide, by Myron L. Fuller, pp. 1259-1263.  
 Graphite, by George Otis Smith, pp. 1265-1269.  
 Lithium minerals, by Edmund Otis Hovey, pp. 1271-1272.  
 Magnesite, by Charles G. Yale, pp. 1273-1278.  
 Mica, by George Otis Smith, pp. 1279-1283.  
 Mineral waters, by Myron L. Fuller, pp. 1285-1308.

## U. S. Geological Survey—Continued.

- Monazite and zircon, by Joseph Hyde Pratt, pp. 1313-1317.  
 Peat, by Marius R. Campbell, pp. 1319-1322.  
 Precious stones, by George Frederick Kunz, pp. 1323-1358.  
 Quartz (flint) and feldspar, by Heinrich Ries, pp. 1359-1360.  
 Tale and soapstone, by Joseph Hyde Pratt, pp. 1361-1368.

2419. Mineral resources of the United States. Calendar year, 1906. 1307 pp., 2 figs., 1907.

Contains the following papers, largely statistical in character, relating to the production, condition of the industry, etc., but also in some cases containing notes on the geology and occurrence of the products treated:

- Introduction, by David T. Day and E. W. Parker, pp. 9-12.  
 Summary of mineral production of the United States in 1906, compiled by Wm. Taylor Thom, pp. 13-65.

## (Metals.)

- Antimony, by Frank L. Hess, pp. 511-516.  
 Bauxite and aluminum, by Ernest F. Burchard, pp. 501-510.  
 Bismuth, by Frank L. Hess, p. 517.  
 Chromite or chromic iron ore, by Arthur J. Collier, pp. 541-542.  
 Copper, by L. C. Graton, pp. 373-438.  
 Gold and silver, by Waldemar Lindgren and others, pp. 111-371.  
   Production in the United States, by Waldemar Lindgren, pp. 111-134.  
   Alaska, by Alfred H. Brooks, pp. 134-146.  
   Arizona, by V. C. Heikes, pp. 147-177.  
   California, by Charles G. Yale, pp. 178-198.  
   Colorado, by Chester Naramore, pp. 199-240.  
   Idaho, by V. C. Heikes, pp. 240-267.  
   Montana, by Alexander N. Winchell, pp. 267-287.  
   Nevada, by Charles G. Yale, pp. 287-300.  
   New Mexico, by Chester Naramore, pp. 300-312.  
   Oregon, by Charles G. Yale, pp. 312-318.  
   South Dakota, by Chester Naramore, pp. 319-323.  
 Southern Appalachian States, including Alabama, Georgia, Maryland, North Carolina, South Carolina, Tennessee, Virginia, by H. D. McCaskey, pp. 323-333.  
   Texas, by H. D. McCaskey, pp. 333-334.  
   Utah, by V. C. Heikes, pp. 334-362.  
   Vermont, by H. D. McCaskey, p. 362.  
   Washington, by Charles G. Yale, pp. 362-368.  
   Wyoming, by Chester Naramore, pp. 368-371.  
 Iron ores, pig iron, and steel, by Edwin C. Eckel, pp. 67-102.  
 Lead, by J. M. Boutwell, pp. 439-457.  
 Manganese ores, by Edwin C. Eckel, pp. 103-109.  
 Nickel, cobalt, tungsten, vanadium, molybdenum, titanium, uranium, and tantalum, by Frank L. Hess, pp. 519-540.  
 Platinum, by David T. Day, pp. 551-562.  
 Quicksilver, by J. M. Boutwell, pp. 491-499.  
 Silver. See Gold and silver.  
 Tin, by Frank L. Hess, pp. 543-549.  
 Zinc, by J. M. Boutwell, pp. 459-489.

## (Fuels.)

- Coal, by E. W. Parker, pp. 563-753.  
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 Natural gas, by B. Hill, pp. 811-826.  
 Petroleum, by W. T. Griswold, pp. 827-896.

## (Structural materials.)

## Cement:

- Advances in cement technology, 1906, by Edwin C. Eckel, pp. 897-905.  
 Statistics of cement industry in 1906, by L. L. Kimball, pp. 906-931.  
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 Glass sand, sand, and gravel, by Ernest F. Burchard, pp. 993-1000.  
 Lime and sand-lime brick, by Edwin C. Eckel, pp. 985-991.  
 Slate, by A. T. Coons, pp. 1001-1005.  
 Stone, by A. T. Coons, pp. 1007-1041.



## U. S. Geological Survey—Continued.

(Abrasive materials.)

Abrasive materials, by Douglas B. Sterrett, pp. 1043-1054.

(Chemical materials.)

Arsenic, by Frank L. Hess, pp. 1055-1058.

Barytes, with a note on strontium, by Ernest F. Burchard, pp. 1109-1114.

Borax, by Charles G. Yale, pp. 1059-1062.

Fluorspar and cryolite, by Ernest F. Burchard, pp. 1063-1067.

Gypsum and gypsum products, by Ernest F. Burchard, pp. 1069-1078.

Mineral paints, pp. 1115-1122.

Phosphate rock and phosphorus:

Phosphate rock, by Myron L. Fuller, pp. 1079-1084.

Phosphorus, by George W. Stose, pp. 1084-1090.

Salt and bromide, by A. T. Coons, pp. 1091-1101.

Sulphur and pyrite, pp. 1103-1108.

(Miscellaneous.)

Asbestos, by J. S. Diller, pp. 1123-1129.

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Precious stones, by Douglas B. Sterrett, pp. 1213-1252.

Quartz (flint) and feldspar, by Edson S. Bastin, pp. 1253-1270.

Selenium, by Frank L. Hess, p. 1271.

Talc and soapstone, by Arthur J. Collier, pp. 1273-1275.

Contributions to economic geology, 1905.—U. S. Geol. Survey, Bull. no. 285, 506 pp., 13 pls., 16 figs., 1906.

The papers in this bulletin have been listed under the individual authors.

Contributions to economic geology, 1906. Part I. Metals and nonmetals, except fuels.—U. S. Geol. Survey, Bull. no. 315, 505 pp., 4 pls., 20 figs., 1907.

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The papers in this bulletin have been listed under the individual authors.

Report on progress of investigations of mineral resources of Alaska in 1906.—See Brooks, A. H., and others.

Vallat, B. W.

2420. The iron ores and system of mining at Sunrise mine, Wyoming.—Colorado Sci. Soc., Proc., vol. 8, pp. 315-322, 6 pls., 1907.

Van Hise, Charles Richard.

2421. The problems of geology.—Congress of Arts and Science, Universal Exposition, St. Louis, 1904, vol. 4, pp. 525-548, 1906.

2422. The geology of the Cobalt district [Ontario].—Abstract: Canadian Min. Jour., vol. 28, no. 4 (new ser., vol. 1, no. 2), pp. 44-45, April 1, 1907.

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Van Horn, F. B.

2423. The mineral production of Illinois in 1905.—Illinois State Geol. Survey, 14 pp. 1906.

2424. Limestones available for fertilizers.—Illinois State Geol. Survey, Bull. no. 4, pp. 177-183, 1907.

Van Wagenen, H. R.

2425. Tungsten in Colorado.—Colorado School of Mines, Bull., vol. 3, no. 2, pp. 138-169, 2 figs., January, 1906.

Includes notes on the occurrence in Colorado of ores containing tungsten.

Vaux, George, and Vaux, William S.

2426. Les variations périodiques des glaciers, 1905. British Columbia and Alberta.—Zeitschr. f. Gletscherkunde, Bd. 1, Heft 3, p. 180, 1906.

Gives a short account of the condition in 1905 of the glaciers of British Columbia and Alberta.

2427. Observations made in 1906 on glaciers in Alberta and British Columbia.—Philadelphia Acad. Nat. Sci., Proc., vol. 58, pp. 568-579, 5 pls., 1907.

2428. Observations made in 1907 on glaciers in Alberta and British Columbia.—Philadelphia, Acad. Nat. Sci., Proc., vol. 59, pt. 3, pp. 560-563, 1907.

Vaux, William S.

2429. Modern glaciers: their movements and the methods of observing them.—Philadelphia, Eng. Club, Proc., vol. 24, no. 3, pp. 259-283, 13 figs., July, 1907.

Veatch, Arthur C.

2430. On the human origin of the small mounds of the lower Mississippi Valley and Texas.—Science new ser., vol. 23, pp. 34-36, January 5, 1906.

Describes character and occurrence of these mounds and states objections to considering them of human origin.

2431. Long Island water resources.—Supplement to the Taxpayer [Brooklyn, N. Y.], April 21, 1906. 15 pp., 6 figs.

An account of the geologic structure and history of Long Island and its underground water resources.

2432. Age and type localities of the supposed Jurassic fossils collected north of Fort Bridger, Wyoming, by Frémont in 1843.—Am. Jour. Sci., 4th ser., vol. 21, pp. 457-460, June, 1906.

2433. Fluctuations of the water level in wells, with special reference to Long Island, New York.—U. S. Geol. Surv., W.-S. and Irrig. Paper no. 155, 83 pp., 9 pls., 17 figs., 1906.

2434. Outlines of the geology of Long Island [New York].—U. S. Geol. Survey, Prof. Paper no. 44, pp. 15-52, 10 pls., 20 figs., 1906.

Describes the geologic structure, the occurrence, character, and relations of Cretaceous, Tertiary, and Quaternary deposits and the geologic history of Long Island.

2435. Underground water conditions of Long Island.—U. S. Geol. Survey, Prof. Paper no. 44, pp. 53-85, 9 pls., 16 figs., 1906.

2436. Geology and underground water resources of northern Louisiana and southern Arkansas.—U. S. Geol. Survey, Prof. Paper no. 46, 422 pp., 51 pls., 33 figs., 1906.

Describes the geologic history and structure, the occurrence, character, and relations of Cretaceous, Tertiary, and Quaternary formations, the general underground water conditions and principal water-bearing horizons, and the underground water prospects by counties.

2437. Coal and oil in southern Uinta County, Wyo.—U. S. Geol. Survey, Bull. no. 285, pp. 331-353, 3 pls. (maps and sections), 1906.

Describes the stratigraphy and structure of the area and the occurrence, character, and geologic relations of coal beds and of petroleum.

2438. Geology and underground water resources of northern Louisiana with notes on adjoining districts.—Louisiana, Geol. Survey, Bull. no. 4, 209 pp., 26 pls., 18 figs., 1906.

This paper is made up of excerpts from Professional Paper no. 46 of the U. S. Geological Survey. See no. 2436.

Veatch, Arthur C.—Continued.

2439. On the origin and definition of the geologic term "Laramie."—*Jour. Geology*, vol. 15, no. 6, pp. 526-549, 1907. Abstract: *Am. Jour. Sci.*, 4th ser., vol. 24, pp. 18-22, July, 1907.

2440. Coal fields of east-central Carbon County, Wyo.—*U. S. Geol. Survey, Bull.* no. 316, pp. 244-260, 1 pl., 1907.

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2441. Well records on Long Island.—*U. S. Geol. Survey, Prof. Paper* no. 44, pp. 116-337, 11 pls., 7 figs., 1906.

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2442. The term "colluvial" as applied to clay deposits.—*Science*, new ser., vol. 24, p. 782, December 14, 1906.

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2443. Kaolins and fire clays of central Georgia.—*U. S. Geol. Survey, Bull.* no. 315, pp. 303-314, 1 fig., 1907.

Verri, A.

2444. Le eruzioni della Montagna Pelée e del vulcano Laziale.—*Soc. geol. italiana, Boll.*, vol. 24, pp. 84-88, 1905.

Describes phenomena attending the eruption of Mont Pelé in 1902.

Verrill, Addison E.

2445. The Bermuda Islands. Part IV, Geology and paleontology, and Part V, An account of the coral reefs.—*Connecticut Acad. Arts and Sci., Trans.*, vol. 12, pp. 45-348, 25 pls., 180 figs., 1907.

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Vicaire, A.

2446. Les gisements pétrolifères des États Unis.—*Soc. de l'Ind. min., St. Étienne, Bull.*, 4<sup>e</sup> ser., t. 4, pp. 681-849, 5 pls., 11 figs., 1905; t. 7, pp. 433-488, 3 pls., 5 figs., 1907.

An extended account of the petroleum industry and petroleum deposits of the United States.

Vigier, Victor von.

Sobre la aplicación de la potasa cáustica á la preparación de fósiles.—See Böse and Vigier, no. 269.

Villafaña, Andrés.

2447. El volcán Jorullo.—*México, Inst. Geol., Parergones*, t. 2, no. 3, pp. 73-130, 8 pls., 1907.

Describes situation, topography, geologic structure, and petrography of the volcano Jorullo, in Mexico.

Villarello, Juan D.

2448. Descripción de las minas "Santiago y anexas" de Estado de Michoacán [México].—*Soc. cient. "Antonio Alzate," Mem. y Rev.*, t. 22, pp. 125-140, 3 pls., 1 fig., 1905.

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2449. Reseña del mineral de Arzate (Estado de Durango).—*Soc. cient. "Antonio Alzate," Mem. y Rev.*, t. 23, pp. 211-240, 1905.

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Villarello, Juan D.—Continued.

2451. Description des mines "La Bella Union," (État de Guerrero). Génèse des gisements de mercure.—Soc. cient. "Antonio Alzate," Mem. y Rev., t. 23, pp. 395-411, 1905.

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2518. Geologic structure of the State [of Illinois].—Illinois State Geol. Survey, Bull. no. 2, pp. 21-22, 1 pl., 1906.

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2519. Kinderhook faunal studies. IV. The fauna of the Glen Park limestone.—St. Louis Acad. Sci., Trans., vol. 16, no. 7, pp. 435-471, 2 pls., 1906.

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2529. Nakimu caves [British Columbia].—Canada, Dept. of the Interior. Rept. Surveyor-General for 1906, pp. 103-117, 1 pl., 1907.

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2533. The expedition to Colorado for fossil insects.—Am. Mus. Jour., vol. 6, no. 4, pp. 199-203, 5 figs., October, 1906.

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2534. Note on luminescent spodumene.—Mineral Collector, vol. 14, no. 2, pp. 31-32, April, 1907.

2535. A new occurrence of scapolite.—Mineral Collector, vol. 14, no. 3, pp. 37-39, May, 1907.

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2538. Die Mutationstheorie und die Paläontologie.—Natur und Schule, Leipzig, Jahrg. 3, pp. 248-253, 1904 [not seen].

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2544. A remarkable fossil tree trunk from the middle Devonian of New York.—New York State Mus., Bull. 107, pp. 327-360, 11 pls., 1907.

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## White, I. C.

2550. Introduction [to the Report on the geology of the Pan Handle counties of West Virginia].—West Virginia Geol. Survey, County Reports and Maps: Ohio, Brooke, and Hancock counties, pp. vii-xxi, 1 fig. [1907].

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## White, W. P.

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2551. [Report on] paleontology and zoology.—Canada, Geol. Survey, Summ. Rept. for 1905, pp. 131-134, 1906.

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2553. The fossils of the Silurian (Upper Silurian) rocks of Keewatin, Manitoba, the northeastern shore of Lake Winnipegosis, and the lower Saskatchewan River.—Canada Geol. Survey, Paleozoic Fossils, vol. 3, pt. 4, pp. 243-298, 14 pls., 1906.

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2554. The Canadian species of *Plectoceras* and *Barrandoceras*.—Canada, Geol. Survey, Paleozoic Fossils, vol. 3, pt. 4, pp. 299-312, 6 pls., 1906.

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2557. Paleozoic fossils. Appendix: Errata et corrigenda.—Canada, Geol. Survey, Paleozoic Fossils, vol. 3, pt. 4, pp. 341-345, 1906.

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2564. Books of reference on geology and paleontology.—Congress of Arts and Science, Universal Exposition, St. Louis, 1904, vol. 4, pp. 757-759, 1906.

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Alabama, Sumter County, by William G. Smith, pp. 317-342.

Arizona-California, Yuma area, by J. Garnett Holmes and others, pp. 1025-1048.

California, Bakersfield area, by Macy H. Lapham and Charles A. Jensen, pp. 1089-1114.



**Whitney, Milton, and others—Continued.**

- California, Sacramento area, by Macy H. Lapham, pp. 1049-1088.  
 California, San Bernardino area, by J. Garnett Holmes and others, pp. 1115-1151.  
 Colorado, Greeley area, by J. Garnett Holmes and N. R. Neill, pp. 951-994.  
 Florida, Gainesville area, by Thomas D. Rice and W. J. Geib, pp. 269-290.  
 Georgia, Bainbridge area, by Elmer O. Fippin and J. A. Drake, pp. 247-268.  
 Georgia, Dodge County, by Charles W. Ely and A. M. Griffen, pp. 231-246.  
 Indiana, Boonville area, by A. W. Mangum and N. R. Neill, pp. 727-750.  
 Indiana, Marshall County, by Frank Bennett and Charles W. Ely, pp. 689-706.  
 Indiana, Scott County, by A. W. Mangum and N. R. Neill, pp. 707-726.  
 Iowa, Tama County, by Charles W. Ely and others, pp. 769-790.  
 Kansas, Allen County, by J. A. Drake and W. E. Tharp, pp. 875-894.  
 Kansas, Garden City area, by James L. Burgess and George N. Coffey, pp. 895-934.  
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 Michigan, Alma area, by W. Edward Hearn and A. M. Griffen, pp. 639-664.  
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 Missouri-Illinois, O'Fallon area, by Elmer C. Fippin and J. A. Drake, pp. 815-844.  
 Missouri, Saline County, by M. Earl Carr and H. L. Belden, pp. 791-814.  
 Missouri, Webster County, by J. A. Drake and A. T. Strahorn, pp. 845-858.  
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 North Dakota, Cando area, by Elmer O. Fippin and James L. Burgess, pp. 925-950.  
 Ohio, Coshocton area, by Thomas D. Rice and W. J. Geib, pp. 565-580.  
 Ohio, Wooster area, by Thomas A. Caine and W. S. Lyman, pp. 543-564.  
 Pennsylvania, Adams County, by Henry J. Wilder and H. L. Belden, pp. 119-150.  
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 South Carolina, Charlestown area, by F. E. Bonsteel and E. P. Carr, pp. 207-230.  
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 Alabama, Dallas County, by E. P. Carr and others, pp. 453-472.  
 Alabama, Lauderdale County, by F. E. Bonsteel and others, pp. 389-405.  
 Alabama, Montgomery County, by W. E. McLendon and Charles J. Mann, pp. 425-452.  
 California, Stockton area, by Macy H. Lapham and W. W. Mackie, pp. 997-1031.  
 Colorado, Grand Junction area, by J. Garnett Holmes and Thomas D. Rice, pp. 949-974.  
 Florida, Leon County, by Henry J. Wilder and others, pp. 363-388.  
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 Indiana, Newton County, by N. P. Neill and W. E. Tharp, pp. 747-779.  
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 Kansas, Brown County, by James L. Burgess and others, pp. 911-926.  
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 Louisiana, East Baton Rouge Parish, by Charles W. Ely and others, pp. 517-535.  
 Louisiana, Tangipahoa Parish, by A. M. Griffen and Thomas A. Caine, pp. 493-515.  
 Michigan, Oxford area, by Grove B. Jones and M. Earl Carr, pp. 731-745.  
 Minnesota, Carlton area, by W. J. Geib and Grove B. Jones, pp. 815-835.

**Whitney, Milton, and others—Continued.**

- Mississippi, Crystal Springs area, by James L. Burgess and W. E. Tharp, pp. 473-491.  
 Missouri, Crawford County, by W. Edward Hearn and Charles J. Mann, pp. 865-878.  
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 Montana, Gallatin Valley, by Macy H. Lapham and Charles W. Ely, pp. 975-996.  
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 Ohio, Westerville area, by J. E. Lapham and Charles N. Mooney, pp. 715-729.  
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 Tennessee, Henderson County, by M. Earl Carr and Frank Bennett, pp. 643-657.  
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 Texas, Lavaca County, by Charles N. Mooney and others, pp. 623-642.  
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 Texas, Waco area, by A. W. Mangum and M. Earl Carr, pp. 567-599.  
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 Tertiary peneplain: Robinson, 2078.  
 Arkansas: Purdue, 1971; Veatch, 2436.  
 British Columbia, Cascade Mountains: Daly, 632.  
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- Colorado: Darton, 648; Fisher, 869.  
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- Vermont, Champlain Valley: Hitchcock, 1165.  
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 Wyoming, Bald Mountain and Dayton quadrangles: Darton, 645.  
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 Cloud Peak and Fort McKinney quadrangles: Darton, 646.  
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- Measurement of: Berkey, 208.

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 Priest Lake district: Courtis, 585.  
 St. Joe River basin: Collier, 553.  
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 South Mountain: Bell, 197.  
 Maryland: Clark and Mathews, 488; 2418, 2419.  
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Santa Maria district: Arnold and Anderson, 66, 67.

Colorado, Arkansas Valley: Darton, 648.

Clear Creek region: Underhill, 2414.

Cripple Creek district: Lindgren and Ransome, 1604.

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- Bladen formation, Cretaceous, North Carolina : Stephenson, 2281.
- Blanco formation, Tertiary, Texas : Gould, 986.
- Blond shale, Pennsylvania, Arkansas : Purdue, 1971.
- Blue chert series, Devonian, California : Hershey, 1133.
- Bluff formation, Quaternary, Mississippi : Logan, 1608.
- Boggy formation, Carboniferous, Indian Territory : Taff, 2332.

- Bohemian Range group, Cambrian, Michigan: Lane and Seaman, 1518.
- Bohicket marl-sand, Pleistocene, South Carolina: Sloan, 2218.
- Bolio formation, Eocene, Panama: Howe, 1244.
- Bolivar fire clay, Carboniferous, West Virginia: Grimsley, 1046.
- Bolton schist, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Bonnetterre limestone, Cambrian, Missouri: Shepard, 2194.
- Boone chert, Carboniferous, Arkansas: Purdue, 1970.
- Boone formation, Mississippian, Arkansas: Purdue, 1971.
- Boone formation, Mississippian, Indian Territory: Taff, 2332.
- Boone formation, Mississippian, Kansas: Schrader and Haworth, 2144.
- Boquillas flags, Cretaceous, Texas: Udden, 2409.
- Boss Mountain diabase, Carboniferous, California: Diller, 721.
- Bowler formation, Triassic? and Permian, Montana: Rowe, 2090.
- Bow River series, Canada: Walcott, 2470.
- Boyle limestone, Devonian, Kentucky: Foerste, 884.
- Bradford schist, Vermont: Richardson, 2037.
- Bragdon formation, California: Hershey, 1133.
- Bragdon formation, Carboniferous, California: Diller, 721.
- Brainard shales, Ordovician, Iowa: Calvin, 388.
- Branford granite-gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Brassfield limestone, Silurian, Kentucky: Foerste, 883, 884.
- Brasstown schist, Cambrian, North Carolina: Keith, 1352.
- Brayman shales, Silurian, New York: Grabau, 991.
- Brentwood limestone lentil, Pennsylvania, Arkansas: Purdue, 1971.
- Brevard schist, Cambrian, North Carolina and South Carolina: Keith, 1353.
- Bridger group, Tertiary, Wyoming: Sinclair, 2214.
- Bridger formation, Tertiary, Wyoming: Veatch, 2437.
- Brier Creek marl, Oligocene, South Carolina: Sloan, 2218.
- Brimfield schist, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Bristol granite-gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Brock shale, Triassic, California: Diller, 721.
- Bromley formation, Ordovician, Kentucky: Bassler, 156.
- Bronson beds, Carboniferous, Kansas: Wooster, 2636.
- Brookfield diorite, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Brownstown formation, Cretaceous, Arkansas: Veatch, 2436.
- Brush Creek limestone, Carboniferous, Pennsylvania: Stevenson, 2294.
- Brush Creek limestone, Carboniferous, West Virginia: Grimsley, 1046.
- Bryson formation, Carboniferous, Kentucky: Ashley and Glenn, 77.
- Buchanan gravels, Pleistocene, Iowa: Arey, 53; Calvin, 388; Leonard, 1559; Macbride, 1639; Norton, 1805; Williams, 2588.
- Buda limestone, Cretaceous, Texas: Udden, 2408-2409.
- Buffalo sandstone, Carboniferous, Pennsylvania: Stevenson, 2294.
- Buffalo sandstone, Carboniferous, West Virginia: Grimsley, 1044, 1046.
- Bully Hill rhyolite, Triassic, California: Diller, 721.
- Burches Ferry marl, Cretaceous, South Carolina: Sloan, 2218.
- Burden conglomerate, Ordovician, New York: Grabau, 991.
- Burgen sandstone, Ordovician, Indian Territory: Taff, 2332.
- Burgoon sandstone, Mississippian, Pennsylvania: Butts, 368; Woolsey, 2634.
- Burke formation, Algonkian, Montana: Walcott, 2470.
- Burlingame shales, Carboniferous, Kansas: Wooster, 2636.
- Burlington limestone, Mississippian, Illinois: Weller, 2523.
- Burlington limestones, Mississippian, Iowa: Beyer and Williams, 234.
- Burlington limestone, Mississippian, Missouri: Shepard, 2194.
- Burns tuff, Oligocene, Colorado: Cross *et al.*, 607.
- Burro gravels and tuffs, Tertiary, Texas: Udden, 2409.
- Bushberg sandstone, Mississippian, Missouri: Weller, 2519.
- Butler sandstone, Carboniferous, Pennsylvania: Butts, 268; Woolsey, 2634.
- Buxton formation, Pennsylvanian, Kansas: Schrader and Haworth, 2144.
- Cable formation, California: Lawson, 1528.
- Cacapon sandstone, Silurian, West Virginia: Grimsley, 1044.
- Cache Creek group, Devonian, British Columbia: Brooks, 313.
- Calceiferous, Michigan: Lane, 1508.
- Calceiferous, Ordovician, Ontario: Ellis, 788.
- Calceiferous formation, Ordovician, Michigan: Lane and Seaman, 1518.
- Calderwood formation, Cambrian, Maine: Smith *et al.*, 2241.
- Calhoun shales, Carboniferous, Kansas: Wooster, 2636.
- Calvert formation, Miocene, Maryland: Clark and Mathews, 488; Shattuck, 2185, 2188, 2191; Shattuck *et al.*, 2193.
- Calvert formation, Tertiary, Virginia: Clark and Miller, 489.



- Calvert formation, Tertiary, Maryland and Delaware: Miller, 1749.
- Cambridge limestone, Carboniferous, Pennsylvania: Butts, 368; Stevenson, 2294.
- Cambridge limestone, Carboniferous, Pennsylvania, Ohio, and West Virginia: Griswold and Munn, 1048.
- Cambridge limestone, Carboniferous, West Virginia: Grimsley, 1044, 1046.
- Camillus shale, Silurian, New York: Hartnagel, 1085; Luther, 1633.
- Campbell's Creek limestone, Carboniferous, West Virginia: Grimsley, 1044.
- Camp Creek formation, pre-Cambrian, Montana: Emmons, 806.
- Camp Creek series, Algonkian, Montana: Walcott, 2470.
- Camp Nelson, Ordovician, Kentucky: Miller, 1748.
- Cannelton limestone, Carboniferous, West Virginia: Grimsley, 1044.
- Canterbury granite-gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Cantwell formation, Tertiary, Alaska: Brooks, 313.
- Canyon formation, Carboniferous, Texas: Ries, 2058.
- Canyon Largo sandstones, Eocene, New Mexico: Keyes, 1388, 1390.
- Capefear formation, Jurassic?, North Carolina: Stephenson, 2281.
- Cape Girardeau limestone, Ordovician, Illinois: Weller, 2517, 2524.
- Capitan limestone, Carboniferous, New Mexico: Keyes, 1377.
- Cardiff quartzite, Algonkian, Maryland: Clark and Mathews, 488.
- Cardiff shale, Devonian, New York: Luther, 1633.
- Carlile formation, Cretaceous, Colorado: Darton, 648; Fisher, 869.
- Carlile shale, Cretaceous, Nebraska: Condra, 570.
- Carlile shale, Cretaceous, Wyoming: Darton and O'Hara, 656.
- Carlyle limestone, Carboniferous, Kansas: Wooster, 2636.
- Carmichaels formation, Pleistocene, Pennsylvania: Clapp, 475, 476.
- Carmichaels formation, Quaternary, Pennsylvania: Butts, 368.
- Carolina gneiss, Archean, North Carolina: Keith, 1352, 1354.
- Carolina gneiss, Archean, North Carolina and South Carolina: Keith, 1353.
- Cashaqua shale, Devonian, New York: Luther, 1633, 1634.
- Cason shale, Ordovician, Arkansas: Purdue, 1970.
- Cassville plant shale, Carboniferous, West Virginia: Grimsley, 1046.
- Cassville shale, Carboniferous, Appalachian region: Stevenson, 2295.
- Cassville shale, Carboniferous, Pennsylvania: Clapp, 475.
- Castine formation, Cambrian, Maine: Smith *et al.*, 2241.
- Catahoula formation, Tertiary, Louisiana: Veatch, 2436, 2437.
- Cathedral granite, Tertiary, Cascade Mountains: Daly, 632.
- Catron formation, Carboniferous, Kentucky: Ashley and Glenn, 77.
- Catskill formation, Devonian, Pennsylvania: Butts, 367.
- Catskill formation, Devonian, West Virginia: Grimsley, 1044.
- Catskill member, Devonian, Pennsylvania: Clapp, 475.
- Catskill series, Devonian, New York: Grabau, 991.
- Cave Creek gypsum, Permian, Kansas: Wooster, 2636.
- Cave Springs - sandstone, Carboniferous, Kansas: Wooster, 2636.
- Cawood sandstone member, Carboniferous, Kentucky: Ashley and Glenn, 77.
- Cayuga formation, Silurian, Maryland: Clark and Mathews, 488.
- Cayuga group, Silurian, Wisconsin: Alden, 23.
- Cayuta shale member, Devonian, New York: Williams, 2583.
- Cedar Hill sandstones, Permian, Kansas: Wooster, 2636.
- Cedar Point shales and limestones, Permian, Kansas: Wooster, 2636.
- Cedar Valley limestone, Devonian, Iowa: Calvin, 387, 388.
- Cedar Valley stage, Devonian, Iowa: Arey, 53; Norton, 1805.
- Central City granite, Colorado: Underhill, 2412.
- Central (Mine) group, Cambrian, Michigan: Lane and Seaman, 1518.
- Chaco marls, Eocene, New Mexico: Keyes, 1388, 1390.
- Chagrin formation, Devonian, Kentucky: Foerste, 883.
- Chama clays, Miocene, New Mexico: Keyes, 1388.
- Chaman series, Eocene, New Mexico: Keyes, 1390.
- Chamberlain shale, Algonkian, Montana: Rowe, 2090.
- Chambersburg formation, Ordovician, Virginia: Bassler, 158.
- Chambersburg limestone, Ordovician, Maryland: Clark and Mathews, 488.
- Chambersburg limestone, Ordovician, Pennsylvania: Stose, 2318.
- Chanute shale, Pennsylvanian, Kansas: Beede and Rogers, 181; Schrader and Haworth, 2144; Wooster, 2636.
- Chariton conglomerate, Pennsylvanian, Iowa: Beyer and Williams, 234.
- Chatoga zone, Archean, South Carolina: Sloan, 2218.
- Chattahoochee, Tertiary, Georgia: Harper, 1077.

- Chattahoochee series, Miocene, Alabama: Smith, 2229.
- Chattahoochee series, Tertiary, Gulf region: Smith, 2226.
- Chattanooga shale, Devonian, Indian Territory: Taff, 2332.
- Chauga zone, Cambrian?, South Carolina: Sloan, 2218.
- Chautauqua sandstone, Carboniferous, Kansas: Wooster, 2636.
- Chazy, Ordovician, Ontario: Ellis, 788.
- Chazy beds, Ordovician, New York, Ruedemann, 2097.
- Chazy formation, Ordovician, Vermont: Seely, 2164.
- Chazy limestone, Ordovician, Vermont: Edson, 774.
- Chazy limestone, Ordovician, New York, Vermont, and Canada: Raymond, 1987.
- Chelmsford sandstone, Canada: Coleman, 546.
- Cheimsford sandstone, pre-Cambrian, Ontario: Coleman, 539.
- Chemung formation, Devonian, New York: Williams, 2583.
- Chemung formation, Devonian, Pennsylvania: Butts, 367; Clapp, 475, 477.
- Chemung formation, Devonian, West Virginia: Grimsley, 1044.
- Chemung group, Devonian, New York: Williams, 2586.
- Chemung member, Devonian, Maryland: Clark and Mathews, 488.
- Chemung sandstones, Devonian, New York: Luther, 1634.
- Cheraw cobbles, Pleistocene, South Carolina: Sloan, 2218.
- Cherokee shale, Pennsylvanian, Kansas: Schrader and Haworth, 2144; Wooster, 2636.
- Cherokee shale, Pennsylvanian, Missouri: Shepard, 2194.
- Cherokee zone, Cambrian?, South Carolina: Sloan, 2218.
- Cherryvale shale, Pennsylvanian, Kansas: Schrader and Haworth, 2144; Wooster, 2636.
- Chesapeake group, Miocene, Maryland: Clark and Mathews, 488; Shattuck, 2188, 2191; Shattuck *et al.*, 2193.
- Chester formation, Mississippian, Mississippi: Crider, 595.
- Chester group, Mississippian, Missouri: Shepard, 2194.
- Chickamauga limestone, Ordovician, Alabama: Butts, 370.
- Chickamauga limestone, Ordovician, Virginia: Bassler, 158.
- Chickasaw (Wilcox) group, Eocene, Alabama: Smith, 2229.
- Chico formation, Cretaceous, California: Diller, 721.
- Chico series, Cretaceous, California: Crandall, 590.
- Chippewa felsite, Algonkian, Michigan: Gordon and Lane, 985.
- Chisna group, Devonian, Alaska: Brooks, 313.
- Chisos beds, Cretaceous, Texas: Udden, 2409.
- Chitstone limestone, Alaska: Brooks, 313.
- Chopaka intrusive, Paleozoic, Cascade Mountains: Daly, 632.
- Choptank formation, Miocene, Maryland: Clark and Mathews, 488; Shattuck, 2185, 2188, 2191; Shattuck, *et al.*, 2193.
- Choptank formation, Tertiary, Virginia: Clark and Miller, 489.
- Chouteau limestone, Mississippian, Illinois: Weller, 2523.
- Chouteau limestone, Mississippian, Missouri: Shepard, 2194.
- Chugwater formation, Triassic?, Wyoming: Darton, 642, 644-647; Fisher, 873.
- Cibolo limestone, Carboniferous, Texas: Udden, 2409.
- Cimarron Creek latite, Colorado: Cross *et al.*, 607.
- Cimarronian series, Carboniferous, New Mexico: Keyes, 1377.
- Cincinnati formation, Ordovician, Wisconsin: Alden, 23.
- Cincinnati formation, Ordovician, Illinois: Weller, 2517, 2524.
- Cisco formation, Carboniferous, Texas: Ries, 2058.
- Claggett formation, Cretaceous, Alberta: Cairnes, 381; Dowling, 735.
- Clairborne formation, Eocene, Mississippi: Logan, 1608.
- Clairborne formation, Tertiary, Louisiana and Arkansas: Veatch, 2436, 2437.
- Clairborne group, Eocene, Alabama: Smith, 2229.
- Clairborne group, Tertiary, Mississippi: Crider, 595; Crider and Johnson, 599.
- Clairborne stage, Eocene, Louisiana: Harris, 1079.
- Clallam formation, Tertiary, Washington: Arnold, 56.
- Clarion sandstone, Carboniferous, Pennsylvania: Butts, 368.
- Clarksburg limestone, Carboniferous, West Virginia: Grimsley, 1044, 1046.
- Claysville limestone, Carboniferous, Pennsylvania, Ohio, and West Virginia: Griswold and Munn, 1048.
- Clayton formation, Tertiary, Mississippi: Crider, 595; Crider and Johnson, 599.
- Clayton limestone, Eocene, Alabama: Smith, 2229.
- Clayton limestone, Eocene, Mississippi: Logan, 1608.
- Clear Creek gneiss, Colorado: Underhill, 2414.
- Clear Fork division of the Red Beds, Permian, Texas: Case, 443.
- Clermont shale, Ordovician, Iowa: Calvin, 388.
- Clinch ("Medina"), Virginia: Eckel, 765.
- Clinch sandstone, Ordovician, Virginia: Bassler, 158.

- Clinton formation, Silurian, Maryland: Clark and Mathews, 488.
- Clinton formation, Silurian, New York: Hartnagel, 1085.
- Clinton formation, Silurian, West Virginia: Grimsley, 1044.
- Cloverly formation, Cretaceous, Montana: Darton, 652.
- Cloverly formation, Cretaceous, Wyoming: Darton, 642, 644-647; Fisher, 873.
- Coastal group, Canada: Ells, 784.
- Cobleskill dolomite, Silurian, New York: Clarke, 499.
- Cobleskill limestone, Silurian, New York: Grabau, 991; Hartnagel, 1084.
- Cobleskill waterlime, Silurian, New York: Luther, 1633.
- Cochran conglomerate, Cambrian, Tennessee: Keith, 1354.
- Cockeysville marble, Algonkian, Maryland: Clark and Mathews, 488.
- Cockfield member, Tertiary, Louisiana and Arkansas: Veatch, 2436, 2437.
- Cockfield member of Claiborne, Eocene, Louisiana: Harris, 1079.
- Coeymans limestone, Devonian, New York: Grabau, 991; Hartnagel, 1084.
- Coeymans member, Devonian, Maryland: Clark and Mathews, 488.
- Coffeyville formation, Pennsylvanian, Kansas: Schrader and Haworth, 2144.
- Coggon limestone, Devonian, Iowa: Norton, 1805.
- Coldbrook group, pre-Cambrian, Canada: Ells, 784.
- Coldwater series, Mississippian, Michigan: Lane, 1516.
- Coldwater shale, Carboniferous, Michigan: Cooper, 575.
- Coldwater group, Tertiary, Yukon Territory: Brooks, 313.
- Collinsville granite-gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Colorado formation, Cretaceous, Canada: Dowling, 735.
- Colorado formation, Cretaceous, Iowa: Calvin, 387.
- Colorado formation, Cretaceous, Montana: Darton, 652.
- Colorado formation, Cretaceous, North Dakota: Leonard, 1563.
- Colorado formation, Cretaceous, Wyoming: Darton, 642, 644-647; Fisher, 873; Veatch, 2437.
- Columbia clay, Quaternary, Missouri: Shepard, 2194.
- Columbia formation, Mississippi: Brown, 326.
- Columbia formation, Pleistocene, South Carolina: Pugh, 1963.
- Columbia formation, Quaternary, Mississippi: Logan, 1608.
- Columbia formation, Quaternary, Tennessee, Kentucky, and Illinois: Glenn, 971.
- Columbia formation, Tertiary, Georgia: Harper, 1077.
- Columbia group, Pleistocene, Maryland: Clark and Mathews, 488; Shattuck, 2185, 2188, 2191; Shattuck *et al.*, 2193.
- Columbia group, Quaternary, Maryland and Delaware: Miller, 1749.
- Columbia sands, Pleistocene, South Carolina: Sloan, 2218.
- Columbia sands, Pleistocene, Texas: Fenneman, 859; Ries, 2058.
- Columbia Ford limestone, Carboniferous, Kansas: Wooster, 2636.
- Columbus formation, Devonian, Ohio: Swartz, 2329.
- Columbus limestone, Devonian, Kentucky: Foerste, 883.
- Columbus limestone, Devonian, Ohio: Stauffer, 2277, 2278.
- Colville, Tertiary, Alaska: Brooks, 313.
- Colvin limestone, Carboniferous, Appalachian region: Stevenson, 2295.
- Comanche series, Cretaceous, Arkansas: Veatch, 2436.
- Comanche series, Cretaceous, Colorado: Darton, 648.
- Combahie shale, Oligocene, South Carolina: Sloan, 2218.
- Conasauga limestone, Ordovician, Alabama: Butts, 370.
- Conasauga shales, Cambrian, Georgia: Watson, 2483.
- Concrete shale, Pennsylvanian, Kansas: Schrader and Haworth, 2144.
- Concrete (Lane) shale, Carboniferous, Kansas: Wooster, 2636.
- Conemaugh formation, Carboniferous, Pennsylvania: Butts, 368; Clapp, 475, 477; Stevenson, 2294; Woolsey, 2634.
- Conemaugh formation, Carboniferous, Pennsylvania, Ohio, and West Virginia: Griswold and Munn, 1048.
- Conemaugh formation, Pennsylvanian, Maryland: Clark and Mathews, 488.
- Conemaugh series, Carboniferous, West Virginia: Grimsley, 1044, 1046.
- Congaree shales, Eocene, South Carolina: Sloan, 2218.
- Connellsville sandstone, Carboniferous, West Virginia: Grimsley, 1044, 1046.
- Connoquenessing sandstone, Carboniferous, Pennsylvania: Butts, 368.
- Cooks Mountain beds, Tertiary, Texas: Fenneman, 859.
- Copley metaandesite, pre-Devonian, California: Diller, 721.
- Copper Harbor conglomerates, Cambrian, Michigan: Lane and Seaman, 1518.
- Cornwall shale, Devonian, New York: Hartnagel, 1084.
- Cortlandt series, Ordovician, New York: Berkey, 207.
- Corwin formation, Jurassic, Alaska: Collier, 552.

- Corwin series, Jurassic, Alaska: Brooks, 313.
- Cottonwood limestone, Carboniferous, Kansas: Beede and Rogers, 181; Wooster, 2636.
- Covington group, Ordovician, Ohio and Kentucky: Bassler, 156.
- Cowrun sandstone, Carboniferous, Pennsylvania: Stevenson, 2294.
- Coyote formation, Carboniferous, New Mexico: Keyes, 1377.
- Crab Orchard division, Silurian, Kentucky: Foerste, 883, 884.
- Cranberry granite, Archean, North Carolina and Tennessee: Keith, 1354.
- Crescent formation, Tertiary, Washington: Arnold, 56.
- Creston quartzite, Algonkian, Montana: Walcott, 2470.
- Creston quartzite, Idaho and Montana: Daly, 631.
- Cripple Creek granite, Colorado: Graton, 1026.
- Crown conglomerate, Cretaceous, Texas: Udden, 2409.
- Crown Point limestone, Ordovician, New York: Raymond, 1987.
- Crusher Hill shales and limestones, Permian, Kansas: Wooster, 2636.
- Cuchara formation, Cretaceous?, Colorado: Darton, 648.
- Culebra beds, Panama: Howe, 1245.
- Culebra formation, Tertiary, Panama: Howe, 1244.
- Curdsville, Ordovician, Kentucky: Miller, 1748.
- Cutler formation, Carboniferous (Permian?), Colorado: Cross *et al.*, 607.
- Cuyahoga formation, Carboniferous, Ohio: Carney, 427.
- Cuyuna series, Minnesota: Leith, 1557.
- Cynthiana formation, Ordovician, Kentucky: Foerste, 884.
- Dadina schists, Alaska: Brooks, 313.
- Dakota formation, Cretaceous, Alberta: Cairnes, 381; Dowling, 735.
- Dakota formation, Cretaceous, Colorado: Darton, 648; Fenneman and Gale, 863; Fisher, 869; Gale, 922.
- Dakota formation, Cretaceous, Iowa: Calvin, 387; Macbride, 1639.
- Dakota formation, Cretaceous, Montana: Rowe, 2090.
- Dakota formation, Cretaceous, Nebraska: Condra, 570; Woodruff, 2628.
- Dakota formation, Cretaceous, Wyoming: Veatch, 2440.
- Dakota sandstone, Cretaceous, Colorado: Cross *et al.*, 607.
- Dakota sandstone, Cretaceous, Colorado and New Mexico: Shaler, 2176.
- Dakota sandstone, Cretaceous, Wyoming: Darton and O'Harra, 656.
- Dakotan series, Cretaceous, New Mexico: Keyes, 1379.
- Danbury granodiorite-gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Davenport, lower, sub-stage, Iowa: Norton, 1805.
- Day Creek dolomite, Permian, Kansas: Wooster, 2636.
- Day Point limestone, Ordovician, New York: Raymond, 1987.
- Deadwood formation, Cambrian, Wyoming: Darton, 642, 644-647; Fisher, 873.
- Decker Ferry limestone, Silurian, New York: Hartnagel, 1084.
- Deerwah shale, Ordovician, Iowa: Beyer and Williams, 234; Calvin, 388.
- Deer Creek limestone, Carboniferous, Kansas: Wooster, 2636.
- DeKalb limestone, Pennsylvanian, Iowa: Beyer and Williams, 234.
- Dekkas andesite, Triassic, California: Diller, 721.
- Delaware limestone, Devonian, Ohio: Stauffer, 2277, 2278; Swartz, 2329.
- Del Rio clay, Cretaceous, Texas: Udden, 2408, 2409.
- Denison formation, Cretaceous, Arkansas: Veatch, 2436.
- Dennis limestone, Carboniferous, Kansas: Beede and Rogers, 181; Schrader and Haworth, 2144; Wooster, 2636.
- Denver formation, Cretaceous?, Colorado: Darton, 648.
- De Smet formation, Cretaceous, Wyoming: Darton, 644-647.
- Des Moines formation, Carboniferous, Iowa: Calvin, 387; Savage, 2128.
- Des Moines group, Pennsylvanian, Missouri: Shepard, 2194.
- Des Moines stage, Pennsylvanian, Iowa: Beyer and Williams, 234.
- Devil's River limestone, Cretaceous, Texas: Udden, 2408.
- Devonshire formation, Bermuda Islands: Verrill, 2445.
- Difficulty Creek latite, Colorado, Cross *et al.*, 607.
- Dighton conglomerate, Massachusetts: Mansfield, 1674.
- Dillard series, Cretaceous, Oregon: Diller, 724.
- Dockum formation, Triassic, Texas: Gould, 986.
- Dockum group, Triassic, Texas: Gould, 987.
- Dog Creek shales, Permian, Kansas: Wooster, 2636.
- Dolores formation, Triassic, Colorado: Cross, 604; Cross *et al.*, 607.
- Don beds of Toronto formation, Quaternary, Canada: Coleman, 547.
- Donley limestone, Carboniferous, Pennsylvania, Ohio, and West Virginia: Griswold and Munn, 1048.
- Doré formation, Canada: Bell, 189.
- Dothan formation, Jurassic, Oregon: Diller, 724.



- Double Mountain division of the Red Beds, Permian, Texas: Case, 443.
- Dresbach formation, Cambrian, Iowa: Calvin, 387.
- Dresbach sandstone, Cambrian, Iowa: Beyer and Williams, 234.
- Drum formation, Pennsylvanian, Kansas: Schrader and Haworth, 2144.
- Drumlummon porphyry dikes, Montana: Barrell, 149.
- Dry Creek shale, Devonian-Silurian, Montana: Emmons, 806.
- Dubuque formation, Ordovician, upper Mississippi Valley: Sardeson, 2122.
- Dudley shales, Carboniferous, Kansas: Beede and Rogers, 181; Wooster, 2636.
- Duffin layer, Devonian, Kentucky: Foerste, 883, 884.
- Dugout clays and gravels, Tertiary, Texas: Udden, 2409.
- Duluth gabbro, Algonkian, Minnesota: Abbott, 1.
- Dundee limestone, Devonian, Michigan: Cooper, 575; Lane, 1516.
- Dunkard formation, Carboniferous, Appalachian region: Stevenson, 2295.
- Dunkard formation, Permian, Maryland: Clark and Mathews, 488.
- Dunkard group, Carboniferous, Pennsylvania: Clapp, 475, 476.
- Dunkard group, Carboniferous (Permian), Pennsylvania: Clapp, 477.
- Dunkard series, Carboniferous, West Virginia: Grimsley, 1044, 1046.
- Eagle formation, Cretaceous, Canada: Dowling, 735.
- Eagle limestone, Carboniferous, West Virginia: Grimsley, 1044.
- Eagle Ford beds, Cretaceous, Texas: Udden, 2408.
- Eagle Ford formation, Cretaceous, Arkansas: Veatch, 2436.
- Eagle Ford formation, Cretaceous, Texas: Ries, 2058.
- Eagle Pass formation, Cretaceous, Texas: Udden, 2408.
- Eagle River group, Cambrian, Michigan: Lane and Seaman, 1518.
- Earlham limestone, Pennsylvanian, Iowa: Beyer and Williams, 234.
- Earlton limestone, Carboniferous, Kansas: Wooster, 2636.
- Eastford granite-gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- East Greenwich group, early Carboniferous or late pre-Carboniferous: Emerson and Perry, 790.
- Easton schist, pre-Tertiary, Washington: Smith and Calkins, 2240.
- Economy member, Ordovician, Ohio and Kentucky: Bassler, 156.
- Eddy formation, Carboniferous, New Mexico: Keyes, 1377.
- Eden, Ordovician, Kentucky: Miller, 1748.
- Eden formation, Ordovician, Ohio and Kentucky: Bassler, 156.
- Eden shale, Ordovician, Pennsylvania: Stose, 2318.
- Eden shales and sandstones, Ordovician, Virginia: Bassler, 158.
- Edgefield-Chesterfield zone, Algonkian?, South Carolina: Sloan, 2218.
- Edisto marls, Miocene, South Carolina: Sloan, 2218.
- Edmonton formation, Cretaceous, Alberta: Cairnes, 381.
- Edmonton series, Cretaceous, Canada: Dowling, 735.
- Elbert formation, Devonian, Colorado: Cross *et al.*, 607.
- Elbrook limestone, Cambro-Ordovician, Pennsylvania: Stose, 2318.
- Elgin sandstone, Pennsylvanian, Kansas: Schrader and Haworth, 2144; Wooster, 2636.
- Elgin shaly limestones, Ordovician, Iowa: Calvin, 388.
- Elk Lick limestone, Carboniferous, West Virginia: Grimsley, 1044, 1046.
- Ellensburg formation, Tertiary, Washington: Smith and Calkins, 2240.
- Ellis formation, Cretaceous, Montana: Rowe, 2090.
- Ellsworth schist, Cambrian or pre-Cambrian, Maine: Smith *et al.*, 2241.
- Elmdale formation, Carboniferous, Kansas: Beede and Rogers, 181; Wooster, 2636.
- Elm Grove limestone, Carboniferous, West Virginia: Grimsley, 1046.
- Elvins formation, Cambro-Ordovician, Missouri: Shepard, 2194.
- Ely greenstone, Archean, Minnesota: Abbott, 1.
- Ely limestone, Carboniferous, Nevada: Lawson, 1526.
- Embar formation, Carboniferous, Wyoming: Darton, 642, 647; Fisher, 873.
- Empire formation, Algonkian, Montana: Walcott, 2470.
- Empire shale, Algonkian, Montana: Barrell, 149.
- Emporia limestone, Carboniferous, Kansas: Beede and Rogers, 181; Wooster, 2636.
- Enfield shale member, Devonian, New York: Williams, 2583.
- Englishtown, Cretaceous, New Jersey: Clark, 483.
- Englishtown sand, Cretaceous, New Jersey: Weller, 2520.
- Enochkin formation, Jurassic, Alaska: Brooks, 313.
- Eo-Huronian, pre-Cambrian, Michigan: Lane and Seaman, 1518.
- Erie (Bronson) beds, Carboniferous, Kansas: Wooster, 2636.
- Erwin quartzite, Cambrian, North Carolina and Tennessee: Keith, 1354.
- Escondido beds of Eagle Pass formation, Cretaceous, Texas: Udden, 2408.
- Eskridge shales, Carboniferous, Kansas: Beede and Rogers, 181.

- Esopus shales, Devonian, New York: Gra-  
ban, 991.
- Estill clay, Silurian, Kentucky: Foerste,  
883, 884.
- Eureka beds, Carboniferous, Kansas:  
Wooster, 2636.
- Eureka quartzite, Ordovician, Nevada and  
California: Ball, 120.
- Eutaw formation, Cretaceous, Alabama:  
Smith, 2229.
- Eutaw formation, Cretaceous, Mississippi:  
Logan, 1608.
- Eutaw sands, Cretaceous, Mississippi:  
Crider, 595; Crider and Johnson, 599.
- Eutaw sand, Cretaceous, Tennessee: Glenn,  
971.
- Evans granite, Colorado: Collier, 553.
- Evanston formation, Tertiary, Wyoming:  
Selfultz, 2151; Veatch, 2437.
- Everton limestone, Ordovician, Arkansas  
and Missouri: Purdue, 1967.
- Fairhaven diatomaceous earth, Miocene,  
Maryland: Shattuck, 2185, 2188.
- Fairhaven diatomaceous member, Miocene,  
Maryland: Shattuck *et al.*, 2193.
- Fairview formation, Ordovician, Ohio and  
Kentucky: Bassler, 156.
- Fall Creek conglomerate lentil, Devonian,  
New York: Williams, 2583.
- Farnham formation, Ordovician, Canada:  
Young, 2660.
- Fayette clays, Tertiary, Texas: Ries, 2058.
- Fayette sands, Tertiary, Texas: Fenne-  
man, 859.
- Fayetteville formation, Mississippian,  
Arkansas: Purdue, 1971.
- Fayetteville formation, Mississippian, In-  
dian Territory: Taff, 2332.
- Fern Glen formation, Mississippian, Mis-  
souri: Weller, 2519.
- Fern Glen (Kinderhook), Mississippian,  
Illinois: Fenneman, 860.
- Fernado formation, Miocene-Pliocene-  
Pleistocene, California: Arnold and  
Anderson, 66.
- Fernando formation, Pliocene, California:  
Arnold, 63; Eldridge and Arnold, 779.
- Fernando formation, Tertiary, California:  
Arnold and Anderson, 67.
- Fernie shale, Alberta: Dowling, 735.
- Fernie shale, Jurassic, Alberta: Cairnes,  
381; Dowling, 736.
- Fickett series, Carboniferous (in part),  
Alaska: Brooks, 313.
- Fish Creek sandstone, Carboniferous, Ap-  
palachian region: Stevenson, 2295.
- Fish Creek sandstone, Carboniferous, Penn-  
sylvania: Clapp, 476.
- Fish Creek sandstone, Carboniferous, West  
Virginia: Grimsley, 1046.
- Fishpot limestone, Carboniferous, Appa-  
lachian region: Stevenson, 2295.
- Fishpot limestone, Carboniferous, Pennsyl-  
vania: Clapp, 475.
- Flades clay, Silurian, Kentucky: Foerste,  
883, 884.
- Flathead quartzite, Cambrian, Montana:  
Emmons, 806; Rowe, 2090; Walcott,  
2470.
- Flatwoods clay, Eocene, Mississippi: Lo-  
gan and Hand, 1609.
- Flatwoods clay, Tertiary, Mississippi: Cri-  
der, 595.
- Fleming clay, Tertiary, Louisiana: Veatch,  
2436, 2437.
- Florena member of Garrison formation,  
Carboniferous, Kansas: Beede and Rog-  
ers, 181.
- Florence beds, Permian, Kansas: Wooster,  
2636.
- Florence flints, Permian, Kansas: Wooster,  
2636.
- Florissant formation, Tertiary (Eocene),  
Colorado: Henderson, 1127.
- Flower-pot shales, Permian, Kansas: Woos-  
ter, 2636.
- Fordham gneiss, pre-Cambrian, New York:  
Berkey, 207.
- Fort Atkinson limestone, Ordovician, Iowa:  
Calvin, 388.
- Fort Benton shales, Cretaceous, Iowa:  
Macbride, 1639.
- Fort Pierre formation, Cretaceous, Mon-  
tana: Rowe, 2090.
- Fort Riley limestones, Permian, Kansas:  
Wooster, 2636.
- Fort Scott limestone, Pennsylvanian, Kan-  
sas: Schrader and Haworth, 2144;  
Wooster, 2636.
- Fort Smith formation, Carboniferous, Ar-  
kansas: Collier, 556.
- Fort Union, Cretaceous, Montana: Brown,  
325.
- Fort Union, Tertiary, Wyoming: Veatch,  
2439.
- Fort Union formation, Cretaceous, Montana:  
Leonard, 1564.
- Fort Union formation, Cretaceous, North  
Dakota: Leonard, 1563.
- Fort Union formation, Tertiary, Wyoming:  
Veatch, 2440.
- Fort Worth formation, Cretaceous, Arkan-  
sas: Veatch, 2436.
- Fortymile series, Alaska: Brooks, 313.
- Fortymile Creek formation, pre-Devonian,  
Alaska: Prindle, 1956.
- Fountain formation, Carboniferous, Colo-  
rado: Finlay, 868.
- Fox Hills formation, Cretaceous, Montana:  
Brown, 325; Leonard, 1564; Rowe, 2090.
- Fox Hills formation, Cretaceous, Wyoming:  
Darton, 642; Fisher, 873.
- Fox Hills member of Montana formation,  
Cretaceous, North Dakota: Leonard,  
1563.
- Fox Hills sandstone, Cretaceous, Colorado:  
Darton, 648.
- Fox Hills sandstone, Cretaceous, North  
Dakota: Leonard, 1560.
- Fox Hills sandstone, Cretaceous, Wyoming:  
Darton and O'Harra, 656.

- Franciscan formation, Jurassic?, California: Arnold and Anderson, 66, 67.
- Franciscan (Golden Gate) series, pre-Cretaceous, California: Crandall, 591.
- Franklin limestone, Carboniferous, Appalachian region: Stevenson, 2295.
- Freda sandstone, Cambrian, Michigan: Lane and Seaman, 1518.
- Freeport group, Carboniferous, West Virginia: Grimsley, 1044.
- Freeport limestone, Carboniferous, Pennsylvania: Butts, 368; Stevenson, 2294.
- Freeport limestone, Carboniferous, West Virginia: Grimsley, 1046.
- Freeport sandstone, Carboniferous, Pennsylvania: Butts, 368; Woolsey, 2634.
- Freeport (Roaring Creek) sandstone, Carboniferous, West Virginia: Grimsley, 1046.
- Fremont limestone, Ordovician, Colorado: Darton, 648.
- Frio clays, Tertiary, Texas: Fenneman, 859; Ries, 2058.
- Frontier formation, Cretaceous, Wyoming: Schultz, 2151; Veatch, 2440.
- Fulda sandstone, Permian, Texas: Case, 443.
- Fulton green shale, Carboniferous, West Virginia: Grimsley, 1046.
- Fulton member, Ordovician, Ohio and Kentucky: Bassler, 156.
- Furnaceville iron ore, Silurian, New York: Hartnagel, 1085.
- Furnaceville iron ore formation, Silurian, New York: Clarke, 494.
- Fuson formation, Cretaceous, Wyoming: Darton and O'Harra, 656.
- Gakona group, Tertiary, Alaska: Brooks, 313.
- Galena (Boone) beds, Mississippian, Kansas: Wooster, 2636.
- Galena dolomite, Ordovician, upper Mississippi Valley: Bain, 99.
- Galena limestone, Ordovician, Iowa: Calvin, 387, 388; Leonard, 1559; Savage, 2128.
- Galena limestone, Ordovician, Wisconsin: Grant, 1017; Grant and Burchard, 1021.
- Galena series, Ordovician, upper Mississippi Valley: Sardeson, 2122.
- Galena stage, Ordovician, Iowa: Beyer and Williams, 234.
- Galesburg shale, Pennsylvanian, Kansas: Schrader and Haworth, 2144; Wooster, 2636.
- Galice formation, Jurassic, Oregon: Diller, 724.
- Gallatin limestone, Cambrian, Montana: Rowe, 2090.
- Gardner clays, Pleistocene, New England: Fuller, 913.
- Garnett limestone, Carboniferous, Kansas: Wooster, 2636.
- Garrard, Ordovician, Kentucky: Miller, 1748.
- Garrison formation, Carboniferous, Kansas: Beede and Rogers, 181.
- Gasconade limestone, Cambro-Ordovician, Missouri: Shepard, 2194.
- Gatun formation, Oligocene, Panama: Howe, 1244.
- Genesee black shale, Devonian, New York: Luther, 1633, 1634.
- Genesee member, Devonian, Maryland: Clark and Mathews, 488.
- Genesee shale, Devonian, New York: Williams, 2583.
- Genesee shale, Devonian, Pennsylvania: Butts, 367.
- Geneva limestone, Devonian, Indiana: Stauffer, 2278.
- Genundawah limestone, Devonian, New York: Luther, 1633, 1634.
- Gering beds, Tertiary, Wyoming and Nebraska: Peterson, 1916.
- Giants Range granite, Algonkian, Minnesota: Abbott, 1.
- Gila conglomerate, Quaternary, Arizona: Lee, 1541.
- Gilbo sandstone, Carboniferous, West Virginia: Grimsley, 1046.
- Gilmore sandstone, Carboniferous, Appalachian region: Stevenson, 2295.
- Gilmore sandstone, Carboniferous, Pennsylvania: Clapp, 476.
- Gladeville sandstone, Carboniferous, Virginia: Stone, 2311.
- Glastonbury granite-gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Glencrye formation, Carboniferous, Colorado: Finlay, 868.
- Glen Park limestone, Mississippian, Missouri: Weller, 2519.
- Goobic sands, Quaternary, Alaska: Brooks, 313.
- Goodland limestone, Cretaceous, Arkansas: Veatch, 2436.
- Goodnight formation, Tertiary, Texas: Gould, 986.
- Goodrich quartzite, pre-Cambrian, Michigan: Lane and Seaman, 1518.
- Goose Creek marl, Miocene, South Carolina: Sloan, 2218.
- Gordon sandstone, Devonian, Pennsylvania: Woolsey, 2634.
- Gosport greensand, Eocene, Alabama: Smith, 2229.
- Gower formation, Silurian, Iowa: Calvin, 387; Savage, 2128.
- Gower stage, Silurian, Iowa: Beyer and Williams, 234.
- Grafton quartzite, Cambrian, Rhode Island: Emerson and Perry, 790.
- Grampus gneiss, pre-Cambrian, New York: Cushing, 614.
- Grand Gulf formation, Miocene, Mississippi: Logan, 1608.
- Grand Gulf formation, Pliocene, Alabama: Smith, 2229.



- Grand Gulf formation, Tertiary, Gulf region: Smith, 2226, 2228.
- Grand Gulf formation, Tertiary, Mississippi: Crider, 595; Crider and Johnson, 599.
- Grand Rapids, upper and lower, Carboniferous, Michigan: Cooper, 575.
- Graneros shale, Cretaceous, Colorado: Darton, 648; Fisher, 869.
- Graneros shale, Cretaceous, Nebraska: Condra, 570.
- Graneros shale, Cretaceous, Wyoming: Darton and O'Harra, 656.
- Gravina series, Cretaceous, Alaska: Brooks, 313.
- Graydon sandstone, Pennsylvanian, Missouri: Shepard, 2194.
- Great conglomerate, Cambrian, Michigan: Lane and Scaman, 1518.
- Great Smoky conglomerate, Cambrian, North Carolina and Tennessee: Keith, 1352.
- Greenbrier formation, Mississippian, Maryland: Clark and Mathews, 488.
- Greenbrier limestone, Carboniferous, Pennsylvania: Clapp, 475.
- Greenbrier limestone, Carboniferous, West Virginia: Grimsley, 1044.
- Greenbrier limestone, Mississippian, Pennsylvania: Clapp, 477.
- Greenbrier limestone, Mississippian, Virginia: Bassler, 158.
- Greendale bed, Ordovician, Kentucky: Foerste, 884.
- Greene formation, Carboniferous, Appalachian region: Stevenson, 2295.
- Greene formation, Carboniferous, Pennsylvania: Clapp, 475, 476.
- Greene formation, Carboniferous, Pennsylvania: Stone and Clapp, 2314.
- Greene formation, Carboniferous, Pennsylvania, Ohio, and West Virginia: Griswold and Munn, 1048.
- Greene formation, Carboniferous (Pennsylvanian), Pennsylvania: Clapp, 477.
- Greenhorn formation, Cretaceous, Wyoming: Darton and O'Harra, 656.
- Greenhorn limestone, Cretaceous, Colorado: Darton, 648; Fisher, 869.
- Greenhorn limestone, Cretaceous, Nebraska: Condra, 570.
- Green River, Tertiary, Wyoming: Veatch, 2439.
- Green River formation, Tertiary, Wyoming: Schultz, 2151; Veatch, 2437.
- Greer formation, Permian, Texas: Gould, 986, 987.
- Grenville series, pre-Cambrian: Adams *et al.*, 13.
- Grenville series, pre-Cambrian, New York: Berkey, 207; Cushing, 614.
- Grenville series, pre-Cambrian, Ontario: Miller and Knight, 1759.
- Greyson formation, Algonkian, Montana: Barrell, 149.
- Greyson shales, Algonkian, Montana: Rowe, 2090.
- Grimes sandstone, Devonian, New York: Luther, 1634.
- Guadaloupan series, Carboniferous, New Mexico: Keyes, 1377.
- Gulf series, Cretaceous, Arkansas: Veatch, 2436.
- Gunflint formation, Algonkian, Minnesota: Abbott, 1.
- Gunstock dike, New Hampshire: Pirsson and Washington, 1934.
- Gunstock gneiss, New Hampshire: Pirsson and Washington, 1934.
- Guye formation, Tertiary, Washington: Smith and Calkins, 2240.
- Hackberry shales, Devonian, Iowa: Williams, 2588.
- Hackberry shales, Permian, Kansas: Wooster, 2636.
- Haddam granite-gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Hale formation, Pennsylvanian, Arkansas: Purdue, 1971.
- Hamburg beds, Cretaceous, South Carolina: Sloan, 2217.
- Hamburg clays, Cretaceous, South Carolina: Sloan, 2218.
- Hamburg slate, pre-Cambrian, Wisconsin: Weidman, 2512.
- Hamilton formation, Devonian, Pennsylvania: Butts, 367.
- Hamilton member, Devonian, Maryland: Clark and Mathews, 488.
- Hamilton shales, Devonian, New York: Grabau, 991.
- Hamilton shale formation, Devonian, New York: Williams, 2583.
- Hamilton shale, Devonian, West Virginia: Grimsley, 1044.
- Hampshire formation, Devonian, Maryland: Clark and Mathews, 488.
- Hampshire formation, Devonian, West Virginia: Grimsley, 1044.
- Hampton clays, Pleistocene, South Carolina: Sloan, 2218.
- Hampton shale, Cambrian, Tennessee: Keith, 1354.
- Hance formation, Carboniferous, Kentucky: Ashley and Glenn, 77.
- Hannibal formation, Mississippian, Missouri: Shepard, 2194.
- Harding sandstone, Ordovician, Colorado: Darton, 648.
- Harper beds, Permian, Kansas: Wooster, 2636.
- Harpers formation, Cambrian, Maryland: Clark and Mathews, 488.
- Harpers formation, Cambrian, Pennsylvania: Stose, 2318.
- Harpers shale, Cambrian, West Virginia: Grimsley, 1044.
- Harrison beds, Tertiary, Wyoming and Nebraska: Peterson, 1916.
- Harrison diorite, Cambrian, New York: Berkey, 207.
- Harrodsburgh limestone, Mississippian, Indiana: Blatchley, 246; Reagan, 1998.



- Hartford limestone, Carboniferous, Kansas: Wooster, 2636.
- Hartland (Hoosac) schist, Connecticut: Gregory, 1034.
- Hartland schist, Connecticut: Gregory and Robinson, 1038.
- Hartshorne sandstone, Carboniferous, Arkansas: Collier, 556.
- Harvard conglomerate, Massachusetts: Mansfield, 1674.
- Hastings phase of Grenville series, pre-Cambrian: Adams *et al.*, 13.
- Hatch shale and flags, Devonian, New York: Luther, 1634.
- Hatchetigbee formation, Eocene, Alabama: Smith, 2229.
- Hawkins formation, pre-Tertiary, Washington: Smith and Calkins, 2240.
- Hayes River beds, Alaska: Brooks, 313.
- Hebron gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Helderberg formation, Devonian, Maryland: Clark and Mathews, 488.
- Helderberg limestone, Silurian, West Virginia: Grimsley, 1044.
- Helen formation, Canada: Bell, 189.
- Helen iron formation, Ontario: Coleman, 541; Moore, 1770.
- Helena formation, Algonkian, Montana: Walcott, 2470.
- Helena limestone, Algonkian, Montana: Barrell, 149.
- Hell Creek beds, Cretaceous, Montana: Brown, 325.
- Henderson granite, Archean, North Carolina and South Carolina: Keith, 1353.
- Henrietta limestone, Pennsylvanian, Missouri: Shepard, 2194.
- Henson tuff, Colorado: Cross *et al.*, 607.
- Hermosa formation, Carboniferous (Pennsylvanian), Colorado: Cross *et al.*, 607.
- Herod gravels, Pleistocene, New England: Fuller, 913.
- Hertha limestone, Carboniferous, Kansas: Beede and Rogers, 181; Wooster, 2636.
- Hesse quartzite, Cambrian, Tennessee: Keith, 1354.
- Highbridge, Ordovician, Kentucky: Miller, 1748.
- High Falls shale, Silurian, New York: Grabau, 991; Hartnagel, 1084.
- High Point sandstone, Devonian, New York: Luther, 1634.
- High Point sandstones, New York: Jones, 1318.
- Hignite formation, Carboniferous, Kentucky: Ashley and Glenn, 77.
- Hilliard formation, Cretaceous, Wyoming: Schultz, 2151.
- Hiwassee slate, Cambrian, North Carolina: Keith, 1352.
- Hiwassee slate, Cambrian, Tennessee: Keith, 1354.
- Holston formation, Ordovician, Virginia: Bassler, 158.
- Homewood sandstone, Carboniferous, Pennsylvania: Butts, 368.
- Homewood sandstone, Carboniferous, Pennsylvania, Ohio, and West Virginia: Griswold and Munn, 1048.
- Honaker limestone, Cambrian, Tennessee: Keith, 1354.
- Honaker limestone, Cambrian, Virginia: Bassler, 158.
- Hoosac schist, Connecticut: Gregory, 1034.
- Hopkinton formation, Silurian, Iowa: Calvin, 387; Norton, 1805; Savage, 2128.
- Hopkinton stage, Silurian, Iowa: Beyer and Williams, 234.
- Hornerstown, Cretaceous, New Jersey: Clark, 483.
- Hornerstown marl, Cretaceous, New Jersey: Weller, 2520.
- Hornsboro sandstone, Jura-Triassic, South Carolina: Sloan, 2218.
- Horsefly gravels, Tertiary, Yukon Territory: Brooks, 313.
- Hosselkus limestone, Triassic, California: Diller, 721.
- Howard limestone, Carboniferous, Kansas: Wooster, 2636.
- Howson andesite, Tertiary, Washington: Smith and Calkins, 2240.
- Hudson River slates, Ordovician, New York: Berkey, 207.
- Hudson schist, Cambro-Ordovician, Connecticut: Hobbs, 1185.
- Hueco limestone, Carboniferous, New Mexico: Keyes, 1377.
- Humphrey shales, Carboniferous, Kansas: Wooster, 2636.
- Hunker series, Yukon Territory: Brooks, 313.
- Huron group, Mississippian, Indiana: Blatchley, 246.
- Huronian, lower, series, pre-Cambrian, Ontario: Silver, 2212.
- Huronian sediments, pre-Cambrian, Ontario: Coleman, 539.
- Idaho Springs formation, pre-Cambrian, Colorado: Ball, 118.
- Ignacio quartzite, Cambrian, Colorado: Cross *et al.*, 607.
- Illinoian, Quaternary, Iowa: Calvin, 387.
- Independence limestone, Carboniferous, Kansas: Wooster, 2636.
- Independence sub-stage, Devonian, Iowa: Norton, 1805.
- Indian Fields formation, Silurian, Kentucky: Foerste, 883, 884.
- Indian River series, Yukon Territory: Brooks, 313.
- Inwood limestone, pre-Cambrian, New York: Berkey, 207.
- Iola limestone, Pennsylvanian, Kansas: Beede and Rogers, 181; Schrader and Haworth, 2144.
- Iola (Earlton) limestone, Carboniferous, Kansas: Wooster, 2636.
- Ione formation, Tertiary, California: Diller, 721.

- Iowan drift, Pleistocene, Iowa: Arey, 53; Calvin, 387, 388; Leonard, 1559; Macbride, 1639; Norton, 1805; Savage, 2128; Williams, 2588.
- Irasburg conglomerate, Ordovician, Vermont: Richardson, 2037.
- Irondequoit limestone, Silurian, New York: Clarke, 494; Hartnagel, 1085.
- Iron Mountain porphyry, Archean, Missouri: Shepard, 2194.
- Ironwood, Michigan: Gordon and Lane, 985.
- Irvine formation, Tertiary, Kentucky: Foerste, 883, 884.
- Isle La Motte sandstone, Ordovician, Vermont: Seely, 2164.
- Islesboro formation, Cambrian, Maine: Smith *et al.*, 2241.
- Ithaca formation, Devonian, New York: Grabau, 991.
- Ithaca shale member, Devonian, New York: Williams, 2583.
- Izard limestone, Ordovician, Arkansas: Purdue, 1970.
- Jackson formation, Eocene, Mississippi: Logan, 1608.
- Jackson formation, Tertiary, Louisiana and Arkansas: Veatch, 2436, 2437.
- Jackson formation, Tertiary, Mississippi: Crider, 595, 598; Crider and Johnson, 599.
- Jackson limestone, Carboniferous, Appalachian region: Stevenson, 2295.
- Jackson stage, Eocene, Louisiana: Harris, 1079.
- Jacob sand, Pleistocene, New England: Fuller, 913.
- Jacobsville sandstone, Cambrian, Michigan: Lane and Seaman, 1518.
- Jameco, Pleistocene, New England: Fuller, 913.
- Jameco gravel, Quaternary, New York: Veatch, 2434.
- Jefferson limestone, Devonian-Silurian, Montana: Emmons, 806.
- Jefferson City limestone, Cambro-Ordovician, Missouri: Shepard, 2194.
- Jeffersonville limestone, Devonian, Indiana: Blatchley, 246; Stauffer, 2278.
- Jennings formation, Devonian, Maryland: Clark and Mathews, 488.
- Jennings formation, Devonian, West Virginia: Grimsley, 1044.
- Jerseyan, Quaternary, Iowa: Norton, 1805.
- Jessamine series, Ordovician, Kentucky: Foerste, 884.
- Joachim limestone, Cambro-Ordovician, Missouri: Shepard, 2194.
- Joachim limestone, Ordovician, Illinois: Weller, 2523.
- Johnston cement limestone, Carboniferous, Pennsylvania: Stevenson, 2294.
- Jollytown limestone, Carboniferous, Appalachian region: Stevenson, 2295.
- Jollytown limestone, Carboniferous, Pennsylvania: Clapp, 475.
- Jordan formation, Cambrian, Iowa: Calvin, 387, 388.
- Jordan sandstone, Cambrian, Iowa: Beyer and Williams, 234.
- Judith River beds, Cretaceous, Alberta: Cairnes, 381.
- Judith River formation, Cretaceous, Canada: Dowling, 735.
- Junction City quartzite, pre-Cambrian, Wisconsin: Weidman, 2512.
- Juniata formation, Silurian, Maryland: Clark and Mathews, 488.
- Kachess rhyolite, Tertiary, Washington: Smith and Calkins, 2240.
- Kanab sandstone, Utah: Lee, 1544.
- Kanawha series, Carboniferous, West Virginia: Grimsley, 1044.
- Kansan drift, Quaternary, Iowa: Arey, 53; Calvin, 387, 388; Leonard, 1559; Macbride, 1639; Savage, 2128; Williams, 2588.
- Kansan (?) deposits, Quaternary, Pennsylvania: Woolsey, 2634.
- Kanwaka shales, Carboniferous, Kansas: Wooster, 2636.
- Kasaan greenstone, Cretaceous, Alaska: Brooks, 313.
- Katalla formation, Tertiary, Alaska: Martin, 1680.
- Kearsarge conglomerate, Michigan: Lane, 1507.
- Kearsarge conglomerate, Algonkian, Michigan: Lane, 1509.
- Keechelus andesitic series, Tertiary, Washington: Smith and Calkins, 2240.
- Keewatin, pre-Cambrian, Ontario: Silver, 2212.
- Keeweenawan, Algonkian, Michigan: Gordon and Lane, 985.
- Kelly formation, Carboniferous, New Mexico: Gordon, 982.
- Kelly limestone, Mississippian, New Mexico: Gordon, 981.
- Kenai formation, Tertiary, Alaska: Moffit, 1762; Paige and Knopf, 1860; Prindle, 1956; Stone, 2308.
- Kenai series, Tertiary, Alaska: Brooks, 313.
- Kennett formation, Devonian, California: Diller, 721.
- Kennicott formation, Jura-Cretaceous, Alaska: Brooks, 313.
- Keokuk limestone, Mississippian, Illinois: Weller, 2523.
- Keokuk limestone, Mississippian, Missouri: Shepard, 2194.
- Keokuk limestone and shale, Mississippian, Iowa: Beyer and Williams, 234.
- Kessler limestone lentil, Pennsylvanian, Arkansas: Purdue, 1971.
- Ketchikan series, Carboniferous, Alaska: Kindle, 1400.
- Ketchikan series, Triassic and Carboniferous, Alaska: Brooks, 313.
- Keeweenawan, pre-Cambrian, Michigan: Lane and Seaman, 1518.

- Keweenawan, pre-Cambrian, Ontario: Silver, 2212.
- Keweenawan series, Ontario: Moore, 1770.
- Kiddville layer, Devonian, Kentucky: Foerste, 884.
- Kiger beds, Permian, Kansas: Wooster, 2636.
- Kiguauk series, Alaska: Brooks, 313; Moffit, 1764.
- Kimmswick limestone, Ordovician, Illinois: Weller, 2522, 2523.
- Kimmswick limestone, Ordovician, Missouri: Weller, 2519.
- Kinderhook, Mississippian, Iowa: Beyer and Williams, 234.
- Kinderhook formation, Carboniferous, Iowa: Calvin, 387.
- Kinderhook group, Mississippian, Illinois: Bowman and Reeds, 277.
- Kinderhook shale, Mississippian, Illinois: Weller, 2523.
- Kingsbury conglomerate, Cretaceous, Wyoming: Darton, 644-647.
- King's Creek silex, Oligocene, South Carolina: Sloan, 2218.
- Kingston group, Canada: Ells, 784.
- Kitchener quartzite, Idaho and Montana: Daly, 631.
- Kittanning group, Carboniferous, West Virginia: Grimsley, 1044.
- Kittanning sandstone, Carboniferous, Pennsylvania: Butts, 368.
- Klondike series, Yukon Territory: Brooks, 313.
- Knife slates, Algonkian, Minnesota: Abbott, 1.
- Knight beds, Tertiary, Wyoming: Veatch, 2439.
- Knight formation, Tertiary, Wyoming: Schultz, 2151.
- Knob Lick granite, Archean, Missouri: Shepard, 2194.
- Knobstone, Mississippian, Indiana: Reagan, 1998.
- Knox dolomite, Cambro-Ordovician, Virginia: Bassler, 158.
- Knox dolomite, Ordovician, Alabama: Butts, 370; Smith, 2229.
- Knox dolomite, Ordovician, Georgia: Watson, 2483.
- Knox dolomite, Ordovician, Tennessee: Keith, 1354.
- Knox limestone, Cambrian and Ordovician, Maryland: Clark and Mathews, 488.
- Knox limestone, Cambro-Ordovician, Pennsylvania: Stose, 2318.
- Knoxville beds, Cretaceous, California: Crandall, 590.
- Knoxville formation, Cretaceous, California: Arnold and Anderson, 66, 67.
- Kona dolomite, pre-Cambrian, Michigan: Lane and Seaman, 1518.
- Kootanie coal measures, Cretaceous, Alberta: Dowling, 736.
- Kootanie formation, Cretaceous, Alberta: Cairnes, 381; Dowling, 735.
- Kootanie series, Cretaceous, Montana and Alberta: Knowlton, 1418.
- Kootenai formation, Cretaceous, Montana: Rowe, 2090.
- Koyukuk series, Cretaceous, Alaska: Brooks, 313.
- Kruger schists, Paleozoic, Washington and British Columbia: Daly, 632.
- Kushtaka formation, Tertiary, Alaska: Martin, 1680.
- Kuzitrin formation, Alaska: Brooks, 313; Moffit, 1764.
- Labette shale, Pennsylvanian, Kansas: Schrader and Haworth, 2144; Wooster, 2636.
- Ladore shale, Carboniferous, Kansas: Wooster, 2636.
- Ladore-Dudley shale, Pennsylvanian, Kansas: Schrader and Haworth, 2144.
- Ladronesian series, Carboniferous, New Mexico: Keyes, 1377, 1382.
- Lafayette formation, Gulf region: Smith, 2228.
- Lafayette formation, Mississippi: Logan and Hand, 1609.
- Lafayette formation, Pliocene, Alabama: Smith, 2229.
- Lafayette formation, Pliocene, Maryland: Clark and Mathews, 488; Shattuck, 2184, 2191.
- Lafayette formation, Pliocene?, Maryland: Shattuck *et al.*, 2193.
- Lafayette formation, Quaternary, Mississippi: Brown, 326; Crider, 595; Logan, 1608.
- Lafayette formation, Tertiary, Georgia: Harper, 1077.
- Lafayette formation, Tertiary, Gulf region: Smith, 2226.
- La Fayette formation, Tertiary, Illinois: Purdy and DeWolf, 1973.
- Lafayette formation, Tertiary, Louisiana and Arkansas: Veatch, 2436, 2437.
- Lafayette formation, Tertiary, Maryland and Delaware: Miller, 1749.
- Lafayette formation, Tertiary, Mississippi: Crider and Johnson, 599.
- Lafayette formation, Tertiary, South Carolina: Pugh, 1963.
- Lafayette formation, Tertiary, Tennessee, Kentucky, and Illinois: Glenn, 971.
- Lafayette formation, Tertiary, Texas: Ries, 2058.
- Lafayette formation, Tertiary, Virginia: Clark and Miller, 489.
- Lafayette gravel, Tertiary, Illinois: Weller, 2523.
- Lafayette gravel, Tertiary, Missouri: Shepard, 2194.
- Lafayette sands, Tertiary, Texas: Fennerman, 859.
- Lagrange division, Mississippi: Logan and Hand, 1609.
- Lagrange formation, Tertiary, Illinois: Purdy and DeWolf, 1973.



- Lagrange formation, Tertiary, Missouri: Shepard, 2194.
- Lagrange formation, Tertiary, Tennessee, Kentucky and Illinois: Glenn, 971.
- Lake Shore trap, Algonkian, Michigan: Gordon and Lane, 985.
- Lake Shore traps, Cambrian, Michigan: Lane and Seaman, 1518.
- Lake Superior sandstone, Cambrian, Michigan: Lane and Seaman, 1518.
- Lake Valley formation, Carboniferous, New Mexico: Keyes, 1377.
- Lake Valley limestone, Mississippian, New Mexico: Gordon, 981.
- Lakota sandstone, Cretaceous, Wyoming: Darton and O'Harra, 656.
- La Motte sandstone, Cambrian, Missouri: Shepard, 2194.
- Lane shales, Carboniferous, Kansas: Beede and Rogers, 181; Wooster, 2636.
- Lantern Hill quartz rock, Connecticut: Gregory, 1034.
- La Plata formation, Jurassic, Colorado: Cross, 604.
- La Plata sandstone, Jurassic, Colorado: Cross *et al.*, 607.
- Laramie, Wyoming: Veatch, 2439.
- Laramie formation, Cretaceous, Colorado: Darton, 648; Fenneman and Gale, 863.
- Laramie formation, Cretaceous, Colorado and New Mexico: Shaler, 2176.
- Laramie formation, Cretaceous, North Dakota: Leonard, 1563.
- Laramie formation, Cretaceous, North Dakota and Montana: Leonard, 1560.
- Laramie formation, Cretaceous, Wyoming: Darton, 642; Fisher, 873; Rowe, 2090; Veatch, 2437.
- Laramie formation, Cretaceous and Tertiary, Wyoming: Veatch, 2440.
- Lauderdale chert, Mississippian, Alabama: Smith, 2229.
- Laurentian, pre-Cambrian: Adams *et al.*, 13.
- Lawrence beds, Carboniferous, Kansas: Wooster, 2636.
- Le Claire substage, Silurian, Iowa: Beyer and Williams, 234.
- Lecompton beds, Carboniferous, Kansas: Wooster, 2636.
- Lee conglomerate, Carboniferous, Virginia: Stone, 2311.
- Lee formation, Carboniferous, Kentucky: Ashley and Glenn, 77.
- Lenoir limestone, Ordovician, Virginia: Bassler, 158.
- Le Roy shales, Carboniferous, Kansas: Wooster, 2636.
- Lewis formation, Cretaceous, Wyoming: Veatch, 2440.
- Lewis shale, Cretaceous, Colorado: Fenneman and Gale, 863.
- Lewis shale, Cretaceous, Colorado and New Mexico: Shaler, 2176.
- Lewiston limestone, Ordovician, Virginia: Bassler, 158.
- Lewiston limestone, Silurian, West Virginia: Grimsley, 1044.
- Lewiston ("Helderberg"), Virginia: Eckel, 765.
- Lexington, Ordovician, Kentucky: Miller, 1748.
- Lime Creek shales, Devonian, Iowa: Beyer and Williams, 234; Calvin, 387; Williams, 2588.
- Linietta clay, Mississippian, Kentucky: Foerste, 883.
- Linville metadiabase, Algonkian?, North Carolina: Keith, 1354.
- Lisbon beds, Tertiary, Mississippi: Crider, 595; Crider and Johnson, 599.
- Lisbon formation, Eocene, Alabama: Smith, 2229.
- Lisburne series, Carboniferous, Alaska: Brooks, 313; Collier, 552.
- Litchfield norite, Connecticut: Gregory, 1034.
- Livingston formation, Cretaceous, Wyoming: Rowe, 2090.
- Llano Estacado formation, Pliocene, New Mexico: Keyes, 1388.
- Llano Estacado sands, Pliocene, New Mexico: Keyes, 1390.
- Lockport dolomite, Silurian, New York: Hartnagel, 1085.
- Lodore shales, Cambrian, Utah: Weeks, 2506.
- Logan formation, Carboniferous, Ohio: Carney, 427.
- Logan sills, Ontario: Silver, 2212.
- Logana, Ordovician, Kentucky: Miller, 1748.
- Lone Mountain limestone, Silurian, Nevada and California: Ball, 120.
- Longwood shale, Silurian, New York: Hartnagel, 1084.
- Lorraine sandstone, Ordovician, New York: Grabau, 991.
- Loudon formation, Cambrian, Maryland: Clark and Mathews, 488.
- Louisiana limestone, Mississippian, Illinois: Weller, 2523.
- Louisiana limestone, Mississippian, Missouri: Shepard, 2194.
- Loup Fork formation, Tertiary, Texas: Gould, 986.
- Lowerre quartzite, pre-Cambrian, New York: Berkey, 207.
- Lucas dolomite, Devonian, Michigan: Lane, 1516.
- Ludlowville shale, Devonian, New York: Luther, 1633.
- Lulbegrud clay, Silurian, Kentucky: Foerste, 883, 884.
- Lunenburg schist, pre-Cambrian, Vermont: Richardson, 2037.
- Lyme granite-gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- McAlester group, Carboniferous, Arkansas: Collier, 556.
- McCloud limestone, Carboniferous, California: Diller, 721.



- M'Elmo formation, Jurassic, Colorado: Cross, 604; Cross *et al.*, 607.
- McKim graywacke, pre-Cambrian, Ontario: Coleman, 539.
- McMicken member, Ordovician, Ohio and Kentucky: Bassler, 156.
- McMillan formation, Ordovician, Ohio: Bassler, 156.
- Maderan limestone, Carboniferous, New Mexico: Gordon, 982.
- Maderan series, Carboniferous, New Mexico: Keyes, 1377.
- Madison limestone, Carboniferous, Montana: Emmons, 806.
- Madison limestone, Carboniferous, Wyoming: Darton, 642, 644-647; Fisher, 873.
- Madison formation, Mississippian, Montana: Rowe, 2090.
- Magdalena group, Carboniferous, New Mexico: Gordon, 982.
- Magnesian, lower, limestone, Ordovician, Illinois: Weller, 2517, 2523, 2524.
- Magnesian, lower, limestone, Ordovician, Iowa: Leonard, 1559.
- Magnesian, lower, Ordovician, Mississippi Valley: Davis, 663.
- Magnesian, lower, limestone, Ordovician, Wisconsin: Grant, 1017.
- Magothy formation, Cretaceous, Maryland: Clark and Mathews, 488; Shattuck *et al.*, 2193.
- Magothy formation, Cretaceous, Maryland and Delaware: Miller, 1740.
- Magothy formation, Cretaceous, New Jersey: Berry, 214; Weller, 2520.
- Mahoning group, Carboniferous, West Virginia: Grimsley, 1044.
- Mahoning limestone, Carboniferous, Pennsylvania: Stevenson, 2294.
- Mahoning sandstone, Carboniferous, Pennsylvania: Butts, 368; Woolsey, 2634.
- Mahoning sandstone, Carboniferous, Pennsylvania, Ohio, and West Virginia: Griswold and Munn, 1048.
- Mahoning sandstone, Carboniferous, West Virginia: Grimsley, 1046.
- Mamacoke gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Manasquan marl, Cretaceous, New Jersey: Weller, 2520.
- Manastash formation, Tertiary, Washington: Smith and Calkins, 2240.
- Mancos shale, Cretaceous: Fenneman and Gale, 863.
- Mancos shale, Cretaceous, Colorado: Cross *et al.*, 607; Taff, 2336.
- Mancos shale, Cretaceous, Colorado and New Mexico: Shaler, 2176.
- Manhattan schist, pre-Cambrian, New York: Berkey, 207.
- Manitou limestone, Ordovician, Colorado: Darton, 648.
- Mankomen group, Permian, Alaska: Brooks, 313.
- Manlius limestone, Silurian, New York: Grabau, 991; Hartnagel, 1084; Prosser, 1961.
- Manlius member, Silurian, Maryland: Clark and Mathews, 488.
- Mannetto, Pleistocene, New England: Fuller, 913.
- Mannetto gravel, Quaternary, New York: Veatch, 2434.
- Mansfield sandstone, Carboniferous, Illinois: Blatchley, 245.
- Manzanan series, Carboniferous, New Mexico: Keyes, 1377.
- Manzano group, Carboniferous, New Mexico: Gordon, 982.
- Maquoketa formation, Ordovician, Iowa: Calvin, 387, 388; Leonard, 1559; Norton, 1805; Savage, 2128.
- Maquoketa shale, Ordovician, Illinois: Weller, 2517, 2522, 2524.
- Maquoketa shale, Ordovician, Iowa: Grant and Burchard, 1021.
- Maquoketa shale, Ordovician, upper Mississippi Valley: Bain, 99.
- Maquoketa (Hudson River) shale, Ordovician, Mississippi Valley: Davis, 663.
- Maquoketa (Hudson River) limestone, Ordovician, Wisconsin: Grant, 1017.
- Maquoketa stage, Ordovician, Iowa: Beyer and Williams, 234.
- Marathon City conglomerate, pre-Cambrian, Wisconsin: Weidman, 2512.
- Marblehead member of Columbus formation, Devonian: Swartz, 2329.
- Marcellus shale, Devonian, Michigan: Cooper, 575.
- Marcellus shale, Devonian, New York: Grabau, 991; Luther, 1633; Williams, 2583.
- Marcellus shale, Devonian, Pennsylvania: Butts, 367.
- Mareniscan, pre-Cambrian, Michigan: Lane and Seaman, 1518.
- Marietta sandstones, Carboniferous, West Virginia: Grimsley, 1046.
- Marion beds, Permian, Kansas: Wooster, 2636.
- Mariposa slates, California: Reid, 2018.
- Marks Head marl, Miocene, South Carolina: Sloan, 2218.
- Marlboro formation, Cambrian, Rhode Island: Emerson and Perry, 790.
- Marlbrook formation, Cretaceous, Arkansas: Veatch, 2436.
- Maromas granite-gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Marsh formation, Algonkian, Montana: Walcott, 2470.
- Marsh shale, Algonkian, Montana: Barrell, 149.
- Marshall formation, Carboniferous, Michigan: Cooper, 575.
- Marshall sandstone, Mississippian, Michigan: Lane, 1516.
- Marshall Hill graywacke, pre-Cambrian, Wisconsin: Weidman, 2512.
- Marshalltown clay-marl, Cretaceous, New Jersey: Weller, 2520.
- Martinez formation, Tertiary, California: Arnold, 57.

- Martinsburg formation, Ordovician, Maryland: Clark and Mathews, 488.
- Martinsburg group, Ordovician, Pennsylvania: Stose, 2318.
- Martinsburg shale, Silurian, West Virginia: Grimsley, 1044.
- Martinsburg shale group and limestones, Ordovician, Virginia: Bassler, 158.
- Maryville limestone, Cambrian, Virginia: Bassler, 158.
- Mascarene series, Devonian, Canada: Ellis, 784.
- Mason City dolomite, Devonian, Iowa: Williams, 2588.
- Massanutten sandstone group, Ordovician, Virginia: Bassler, 158.
- Matanuska series, Alaska: Martin, 1682.
- Matawan formation, Cretaceous, Maryland: Clark and Mathews, 488; Shattuck *et al.*, 2193.
- Matawan formation, Cretaceous, Maryland and Delaware: Miller, 1749.
- Matawan, Cretaceous, New York: Veatch, 2434.
- Matfield shales and limestones, Permian, Kansas: Wooster, 2636.
- Mauch Chunk formation, Carboniferous, Pennsylvania: Butts, 368; Clapp, 475, 477; Woolsey, 2634.
- Mauch Chunk formation, Lower Carboniferous, Pennsylvania: Barrell, 150.
- Mauch Chunk formation, Mississippian, Maryland: Clark and Mathews, 488.
- Mauch Chunk shales, Carboniferous, West Virginia: Grimsley, 1044.
- Maxville or Bayport formation, Carboniferous, Michigan: Cooper, 575.
- Meagher limestone, Cambrian, Montana: Emmons, 806.
- Medicine Lodge beds, Permian, Kansas: Wooster, 2636.
- Medicine Lodge gypsum, Permian, Kansas: Wooster, 2636.
- Medina formation, Silurian, New York: Hartnagel, 1085.
- Medina formation, Silurian, West Virginia: Grimsley, 1044.
- Memphrenfagot slate, Vermont: Richardson, 2037.
- Mentasta schists, Alaska: Brooks, 313.
- Menteth limestone, Devonian, New York: Luther, 1634.
- Meramec limestones, Mississippian, Illinois: Bowman and Reeds, 277.
- Merced formation, Tertiary, California: Prindle, 1956.
- Merced series, Pliocene, California: Crandall, 591.
- Mercer shale, Carboniferous, Pennsylvania: Butts, 368.
- Mercer group, Carboniferous, West Virginia: Grimsley, 1044.
- Merchantville clay-marl, Cretaceous, New Jersey: Weller, 2520.
- Mesaverde formation, Cretaceous, Colorado: Cross *et al.*, 607; Fenneman and Gale, 863; Taff, 2336.
- Mesaverde formation, Cretaceous, Colorado and New Mexico: Shaler, 2176.
- Mesaverde formation, Cretaceous, Wyoming: Veatch, 2440.
- Mesnard quartzite, pre-Cambrian, Michigan: Lane and Seaman, 1518.
- Michigan slate, pre-Cambrian, Michigan: Gordon and Lane, 985; Lane and Seaman, 1518.
- Michigan series, Mississippian, Michigan: Lane, 1516.
- Michipicoten schists, Ontario: Moore, 1770.
- Middendorf beds, Cretaceous, South Carolina: Sloan, 2217, 2218.
- Middlesex black shale, Devonian, New York: Luther, 1633.
- Middlesex shales, Devonian, New York: Luther, 1634.
- Middletown gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Midway formation, Tertiary, Arkansas and Louisiana: Veatch, 2436, 2437.
- Midway group, Eocene, Alabama: Smith, 2229.
- Midway group, Tertiary, Mississippi: Crider, 595; Crider and Johnson, 599.
- Midway stage, Eocene, Mississippi: Logan, 1608.
- Milford chlorite schist, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Milford granite, post-Cambrian, pre-Carboniferous, Rhode Island: Emerson and Perry, 790.
- Million, Ordovician, Kentucky: Miller, 1748.
- Millsap formation, Carboniferous, Texas: Ries, 2058.
- Millsap limestone, Carboniferous, Colorado: Darton, 648.
- Milwaukee formation, Devonian, Wisconsin: Alden, 23.
- Mimbres limestone, Siluro-Ordovician, New Mexico: Gordon, 981.
- Mingo formation, Carboniferous, Kentucky: Ashley and Glenn, 77.
- Minneapolis limestone, Ordovician, Minnesota: Sardeson, 2122.
- Minnesota conglomerate, Algonkian, Michigan: Lane, 1509.
- Mio-Huronian, pre-Cambrian, Michigan: Lane and Seaman, 1518.
- Missouri group, Pennsylvanian, Missouri: Shepard, 2194.
- Missouri stage, Pennsylvanian, Iowa: Beyer and Williams, 234.
- Missourian formation, Carboniferous, Iowa: Calvin, 387.
- Mitchell limestone, Mississippian, Indiana: Blatchley, 246; Reagan, 1998.
- Moccasin limestone, Ordovician, Virginia: Bassler, 158.
- Modelo formation, Miocene, California: Eldridge and Arnold, 779.
- Modin formation, Jurassic, California: Diller, 721.
- Moencopie formation, Carboniferous, New Mexico: Keyes, 1377.

- Moencopie formation, Carboniferous, Utah : Lee, 1544.
- Moencopie shales, Permian, Utah : Huntington, 1257.
- Molas formation, Carboniferous (Pennsylvanian), Colorado : Cross *et al.*, 607.
- Monarch formation, Devonian and Silurian, Montana : Rowe, 2090.
- Monmouth formation, Cretaceous, Maryland : Clark and Mathews, 488 ; Shattuck *et al.*, 2193.
- Monmouth formation, Cretaceous, Maryland and Delaware : Miller, 1749.
- Monongahela formation, Carboniferous, Appalachian region : Stevenson, 2295.
- Monongahela formation, Carboniferous, Pennsylvania : Clapp, 475-477 ; Stone and Clapp, 2314 ; Woolsey, 2634.
- Monongahela formation, Carboniferous, Pennsylvania, Ohio, and West Virginia : Griswold and Munn, 1048.
- Monongahela formation, Pennsylvanian, Maryland : Clark and Mathews, 488.
- Monongahela series, Carboniferous, West Virginia : Grimsley, 1044, 1046.
- Monroe beds, North Carolina : Graton, 1025.
- Monroe limestone, Devonian, Michigan : Lane, 1516.
- Monroe Creek beds, Tertiary, Wyoming and Nebraska : Peterson, 1916.
- Monson granite gneiss, Connecticut : Gregory, 1034 ; Gregory and Robinson, 1038.
- Montalto quartzite member of Harpers formation, Cambrian, Pennsylvania : Stose, 2318.
- Montana formation, Cretaceous, Canada : Dowling, 735.
- Montana formation, Cretaceous, Montana : Darton, 652.
- Montana formation, Cretaceous, North Dakota : Leonard, 1563.
- Montana formation, Cretaceous, Wyoming : Veatch, 2437.
- Montara granite, California : Crandall, 591.
- Montauk drift, Pleistocene, New England : Fuller, 913.
- Monterey sandstone, Devonian, West Virginia : Grimsley, 1044.
- Monterey shale, Miocene, California : Arnold, 63 ; Arnold and Anderson, 66, 67.
- Monterey shale, Tertiary, California : Prindle, 1956.
- Montosa formation, Carboniferous, New Mexico : Keyes, 1377.
- Montpelier slate, Vermont : Richardson, 2037.
- Montrose cherts, Mississippian, Iowa : Beyer and Williams, 234.
- Monument Creek formation, Tertiary, Colorado : Darton, 648.
- Moose Hide group, Yukon Territory : Brooks, 313.
- Morgantown sandstone, Carboniferous, Pennsylvania : Stevenson, 2294 ; Woolsey, 2634.
- Morgantown sandstone, Carboniferous, West Virginia : Grimsley, 1044, 1046.
- Morrison formation, Cretaceous, Colorado : Darton, 648.
- Morrison formation, Cretaceous, Wyoming : Darton, 642, 644-647 ; Fisher, 873.
- Morrison shale, Cretaceous, Wyoming : Darton and O'Harra, 656.
- Morrow formation, Carboniferous, Indian Territory : Taff, 2332.
- Morrow group, Pennsylvanian, Arkansas : Purdue, 1971.
- Mosca formation, Carboniferous, New Mexico : Keyes, 1377.
- Moscow shale, Devonian, New York : Luther, 1633, 1634.
- Mosinee conglomerate, pre-Cambrian, Wisconsin : Weidman, 2512.
- Mound Valley limestone, Pennsylvanian, Kansas : Beede and Rogers, 181 ; Schrader and Haworth, 2144 ; Wooster, 2636.
- Mount Bohemia conglomerate, Michigan : Lane, 1507, 1509.
- Mount Hope marl, Eocene, South Carolina : Sloan, 2218.
- Mount Laurel formation, Cretaceous, New Jersey : Weller, 2520.
- Mount Selman beds, Tertiary, Texas : Fenneman, 859.
- Mount Stuart granodiorite, pre-Tertiary, Washington : Smith and Calkins, 2240.
- Mowry formation, Cretaceous, Wyoming : Veatch, 2440.
- Mowry member, Cretaceous, Wyoming : Darton, 645 ; Darton and O'Harra, 656.
- Moyie argillite, Idaho and Montana : Daly, 631.
- Munising sandstone, Cambrian, Michigan : Lane and Seaman, 1518.
- Murphy marble, Cambrian, North Carolina : Keith, 1352.
- Murray slate, Cambrian, Tennessee : Keith, 1354.
- Myrtle formation, Cretaceous, Oregon : Diller, 724.
- Nabesna limestone, Carboniferous, Alaska : Brooks, 313.
- Nacatoch sand, Cretaceous, Arkansas : Veatch, 2436.
- Naches formation, Tertiary, Washington : Smith and Calkins, 2240.
- Nacimintan series, Eocene, New Mexico : Keyes, 1390.
- Naese sandstone member, Carboniferous, Kentucky : Ashley and Glenn, 77.
- Nahola formation, Eocene, Alabama : Smith, 2229.
- Namacoke gneiss, Connecticut : Gregory and Robinson, 1038.
- Nanafalia formation, Eocene, Alabama : Smith, 2228, 2229.
- Nanaimo group, Cretaceous, British Columbia : Brooks, 313.
- Nanjemoy formation, Eocene, Maryland : Clark and Mathews, 488 ; Shattuck, 2188 ; Shattuck *et al.*, 2193.
- Nanjemoy formation, Tertiary, Virginia : Clark and Miller, 489.



- Nantahala slate, Cambrian, North Carolina: Keith, 1352.
- Napoleon formation, Carboniferous, Michigan: Cooper, 575.
- Narragansett Basin series, Massachusetts: Mansfield, 1674.
- Natchez formation, Quaternary, Mississippi: Logan, 1608.
- Navarro marls, Cretaceous, Texas: Ries, 2058.
- Navesink formation, Cretaceous, New Jersey: Weller, 2520.
- Nebo quartzite, Cambrian, Tennessee: Keith, 1354.
- Needle Mountains group, Algonkian, Colorado: Cross *et al.*, 607.
- Negaunee formation, pre-Cambrian, Michigan: Lane and Seaman, 1518.
- Neihart quartzite, Algonkian, Montana: Rowe, 2090.
- Neo-Huronian, pre-Cambrian, Michigan: Lane and Seaman, 1518.
- Neosho member of Garrison formation, Carboniferous, Kansas: Beede and Rogers, 181.
- Neva limestone, Carboniferous, Kansas: Beede and Rogers, 181; Wooster, 2636.
- Nevada limestone, Devonian, Nevada: Lawson, 1526.
- New Albany or Genesee shale, Devonian, Indiana: Blatchley, 246.
- Newark formation, Triassic, Maryland: Clark and Mathews, 488.
- Newark system, Triassic, New Jersey: Lewis, 1580.
- Newland limestone, Algonkian, Montana: Rowe, 2090.
- New London granite-gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Newman limestone, Carboniferous, Virginia: Bassler, 158.
- New Providence shales, Mississippian, Indiana: Reagan, 1998.
- New Richmond formation, Ordovician, Iowa: Calvin, 387, 388.
- New Richmond formation, Ordovician, upper Mississippi Valley: Bain, 99.
- New Richmond sandstone, Ordovician, Iowa: Beyer and Williams, 234.
- New Scotland limestone, Devonian, New York: Hartnagel, 1084.
- New Scotland beds, Devonian, Mississippi: Crider, 595.
- New Scotland beds, Devonian, New York: Grabau, 991.
- New Scotland member, Devonian, Maryland: Clark and Mathews, 488.
- Niagara dolomite, Silurian, upper Mississippi Valley: Bain, 99.
- Niagara limestone, Silurian, Indiana: Blatchley, 246.
- Niagara limestone Silurian, Iowa: Beyer and Williams, 234; Calvin, 388; Grant and Burchard, 1021; Leonard, 1559; Savage, 2128.
- Niagara formation, Silurian, Maryland: Clark and Mathews, 488.
- Niagara formation, Silurian, New York: Hartnagel, 1085.
- Niagara, Silurian, Mississippi Valley: Fairchild, 835.
- Niagara limestone, Silurian, Wisconsin: Grant, 1017.
- Niagara series, Silurian, Iowa: Norton, 1805.
- Niagaran limestone, Silurian, Illinois: Weller, 2517, 2523, 2524.
- Nichols slate, Cambrian, Tennessee: Keith, 1354.
- Nicola group, Triassic, British Columbia: Brooks, 313.
- Nikolai greenstone, Alaska: Brooks, 313.
- Nineveh limestone, Carboniferous, Appalachian region: Stevenson, 2295.
- Nineveh limestone, Carboniferous, Pennsylvania: Clapp, 476.
- Nineveh limestone, Carboniferous, Pennsylvania, Ohio, and West Virginia: Griswold and Munn, 1048.
- Nineveh limestone, Carboniferous, West Virginia: Grimsley, 1044, 1046.
- Niobrara formation, Cretaceous, Montana: Rowe, 2090.
- Niobrara formation, Cretaceous, Nebraska: Condra, 570.
- Niobrara formation, Cretaceous, North Dakota: Leonard, 1563.
- Niobrara formation, Cretaceous, Wyoming: Darton and O'Harra, 656; Veatch, 2440.
- Nipigon, pre-Cambrian, Ontario: Silver, 2212.
- Nisconlith series, British Columbia: Dawson, 686.
- Nisconlith series, Canada: Walcott, 2470.
- Nisconlith series, Cambrian, Yukon Territory: Brooks, 313.
- Noah Parker horizon, Cambrian, Vermont: Edson, 774.
- Nolichucky shale, Cambrian, Tennessee: Keith, 1354.
- Nolichucky shale, Cambrian, Virginia: Bassler, 158.
- Nome series, Alaska: Moffit, 1764.
- Nome series, Silurian, Alaska: Brooks, 313.
- Nonesuch formation, Algonkian, Michigan: Gordon and Lane, 985.
- Nonesuch formation, Cambrian, Michigan: Lane and Seaman, 1518.
- Nonushuk series, Cretaceous, Alaska: Brooks, 313.
- Nordheimer formation, Carboniferous?, California: Hershey, 1133.
- Norfolk formation, Tertiary, Virginia: Clark and Miller, 489.
- Norfolk Basin series, Massachusetts: Mansfield, 1674.
- Northbridge gneiss, pre-Cambrian, Rhode Island: Emerson and Perry, 790.
- North Haven greenstone, Cambrian, Maine: Smith *et al.*, 2241.



- North Mound quartzite, pre-Cambrian, Wisconsin: Weidman, 2512.
- North Park formation, Tertiary, Wyoming: Veatch, 2440.
- Norton formation, Carboniferous, Virginia: Stone, 2311.
- Nosoni formation, Carboniferous, California: Diller, 721.
- Nottely quartzite, Cambrian, North Carolina: Keith, 1352.
- Nunda formation, Devonian, New York: Williams, 2583.
- Nunda formation, Devonian, Pennsylvania: Butts, 367.
- Nussbaum formation, Tertiary, Colorado: Darton, 648; Fisher, 869.
- Obispo formation, Panama: Howe, 1244.
- Oconee zone, Archean, South Carolina: Sloan, 2218.
- Ogden quartzite, Ordovician, Utah: Emmons, 798; Weeks, 2506.
- Ogishke conglomerate, Algonkian, Minnesota: Abbott, 1.
- Ohio shale, Devonian, Kentucky: Foerste, 883.
- Oldham limestone, Silurian, Kentucky: Foerste, 883, 884.
- Onaping tuff, pre-Cambrian, Ontario: Coleman, 539, 546.
- Oneida conglomerate, Silurian, New York: Clarke, 494; Hartnagel, 1083.
- Oneonta beds, Devonian, New York: Grabau, 991.
- Oneota formation, Ordovician, Iowa: Calvin, 387, 388.
- Oneota formation, Ordovician, upper Mississippi Valley: Bain, 99.
- Oneota limestone, Ordovician, Iowa: Beyer and Williams, 234.
- Onondaga limestone, Devonian, New York: Grabau, 991; Luther, 1633.
- Ontario quartzite, Carboniferous, Utah: Jenney, 1296.
- Onwatin slate, pre-Cambrian, Ontario: Coleman, 539, 546.
- Orange phyllite, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Orca series, Alaska: Brooks, 313.
- Oread limestone, Carboniferous, Kansas: Beede and Rogers, 181; Wooster, 2636.
- Oread, Ordovician, Kentucky: Miller, 1748.
- Oriskany, Virginia: Eckel, 765.
- Oriskany formation (Monterey), Devonian, Maryland: Clark and Mathews, 488.
- Oriskany formation, Devonian, New York: Grabau, 991; Hartnagel, 1084; Williams, 2583.
- Oriskany sandstone, Devonian, New York: Luther, 1633.
- Oriskany sandstone, Devonian, Pennsylvania: Butts, 367.
- Oriskany sandstone, Devonian, West Virginia: Grimsley, 1044.
- Osage, Mississippian, Illinois: Fenneman, 860.
- Osage formation, Carboniferous, Iowa: Calvin, 387.
- Osage limestones, Mississippian, Illinois: Bowman and Reeds, 277.
- Osage limestone, Mississippian, Iowa: Beyer and Williams, 234.
- Osage shales, Carboniferous, Kansas: Wooster, 2636.
- Osceola amygdaloid, Algonkian, Michigan: Lane, 1509.
- Osoyoos granodiorite, Jurassic, Cascade Mountains: Daly, 632.
- Oswego limestone, Carboniferous, Kansas: Wooster, 2636.
- Otis limestone, Devonian, Iowa: Norton, 1805.
- Ouray limestone, Devonian and Carboniferous (Mississippian), Colorado: Cross *et al.*, 607.
- Outer conglomerate, Algonkian, Michigan: Gordon and Lane, 985.
- Outer conglomerate, Cambrian, Michigan: Lane and Seaman, 1518.
- Owen beds, Devonian, Iowa: Williams, 2588.
- Oxmoor sandstone, Mississippian, Alabama: Burchard, 355.
- Painterhood limestone, Pennsylvanian, Kansas: Schrader and Haworth, 2144.
- Paint Lick bed, Ordovician, Kentucky: Foerste, 884.
- Palisade conglomerates, Tertiary, Alaska: Brooks, 313.
- Pamunkey group, Eocene, Maryland: Clark and Mathews, 488; Shattuck, 2188; Shattuck *et al.*, 2193.
- Pamunkey group, Tertiary, Maryland and Delaware: Miller, 1749.
- Parachucla shale, Oligocene, South Carolina: Sloan, 2218.
- Paris, Ordovician, Kentucky: Miller, 1748.
- Paris shale, Carboniferous, Arkansas: Collier, 556.
- Park shale, Cambrian, Montana: Emmons, 806.
- Park granite, Tertiary, Cascade Mountains: Daly, 632.
- Park City formation, Carboniferous, Utah: Boutwell, 271.
- Parkman sandstone, Cretaceous, Wyoming: Darton, 644-647.
- Parma sandstone, Carboniferous, Michigan: Cooper, 575; Lane, 1516.
- Parrish limestone, Devonian, New York: Luther, 1634.
- Parsons formation, Pennsylvanian, Kansas: Schrader and Haworth, 2144; Wooster, 2636.
- Pascagoula formation, Pliocene, Alabama: Smith, 2229.
- Pascagoula formation, Tertiary, Gulf region: Smith, 2226.
- Pascagoula formation, Tertiary, Mississippi: Crider, 595; Crider and Johnson, 599.

- Pasopans member, Eocene, Maryland: Shattuck *et al.*, 2193.
- Patapsco formation, Cretaceous, Maryland: Clark and Mathews, 488; Shattuck *et al.*, 2193.
- Patapsco formation, Cretaceous, Maryland and Delaware: Miller, 1749.
- Patapsco formation, Cretaceous, Virginia: Clark and Miller, 489.
- Patton shale, Mississippian, Pennsylvania: Butts, 368.
- Patuxent formation, Jurassic?, Maryland: Clark and Mathews, 488.
- Patuxent formation, Jurassic?, Virginia: Clark and Miller, 489.
- Patuxent formation, Jurassic? and Cretaceous, Maryland and District of Columbia: Shattuck *et al.*, 2193.
- Pawnee limestone, Pennsylvanian, Kansas: Schrader and Haworth, 2144; Wooster, 2636.
- Peachbottom slate, Algonkian, Maryland: Clark and Mathews, 488.
- Pearisburg limestone, Ordovician, Virginia: Bassler, 158.
- Pecosian series, Pliocene, New Mexico: Keyes, 1390.
- Pee Dee marl, Miocene, South Carolina: Sloan, 2218.
- Peekskill granite, Ordovician, New York: Berkey, 207.
- Pellham (Trenton) limestone, Ordovician, Alabama: Smith, 2229.
- Pella beds, Mississippian, Iowa: Beyer and Williams, 234.
- Pelly gneisses, Alaska: Brooks, 313.
- Peña Blanca marls, Oligocene: Howe, 1244.
- Pennington shale, Carboniferous, Virginia: Bassler, 158.
- Penobscot formation, Cambrian: Smith *et al.*, 2241.
- Peorian, Quaternary, Iowa: Calvin, 387.
- Percha shale, Devonian, New Mexico: Gordon, 981.
- Perry beds, Devonian, Canada: Ells, 784.
- Perryville, Ordovician, Kentucky: Miller, 1748.
- Peshastin formation, pre-Tertiary, Washington: Smith and Calkins, 2240.
- Piercefield gneiss, New York: Cushing, 614.
- Pierre formation, Cretaceous, Canada: Dowling, 735.
- Pierre shale, Cretaceous, Colorado: Darton, 648; Fisher, 869.
- Pierre shale, Cretaceous, North Dakota: Leonard, 1560, 1563.
- Pierre shale, Cretaceous, Nebraska: Condra, 570.
- Pierre shale, Cretaceous, Wyoming: Darton, 642, 644-647; Darton and O'Harra, 656; Fisher, 873.
- Pierre shales, Cretaceous, Montana: Brown, 325; Leonard, 1564.
- Pikes Peak granite, Colorado: Graton, 1026.
- Pilgrim limestone, Devonian-Silurian, Montana: Emmons, 806.
- Piney formation, Cretaceous, Wyoming: Darton, 644-647.
- Piqua limestone, Pennsylvanian, Kansas: Schrader and Haworth, 2144; Wooster, 2636.
- Piscataway member, Eocene, Maryland: Shattuck *et al.*, 2193.
- Pit formation, Triassic, California: Diller, 721.
- Pitkin limestone, Mississippian, Arkansas: Purdue, 1971.
- Pitkin limestone, Mississippian, Indian Territory: Taff, 2332.
- Pittsburg limestone, Carboniferous, Pennsylvania: Stevenson, 2294; Woolsey, 2634.
- Pittsburg limestones, Carboniferous, West Virginia: Grimsley, 1044, 1046.
- Pittsburg red shales, Carboniferous, West Virginia: Grimsley, 1044, 1046.
- Pittsburg sandstone, Carboniferous, Appalachian region: Stevenson, 2295.
- Pittsburg sandstone, Carboniferous, Pennsylvania: Clapp, 475.
- Pittsburg sandstone, Carboniferous, West Virginia: Grimsley, 1046.
- Pittsford shale, Silurian, New York: Hartnagel, 1085.
- Plainfield quartz schist, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Platteville formation, Ordovician, Iowa: Burchard, 353.
- Platteville limestone, Ordovician, Iowa: Calvin, 387, 388.
- Platteville limestone, Ordovician, upper Mississippi Valley: Bain, 99; Sardeson, 2122.
- Platteville (Trenton), Ordovician, Mississippi Valley: Davis, 663.
- Platteville limestone, Ordovician, Wisconsin: Grant, 1017; Grant and Burchard, 1021.
- Platteville stage, Ordovician, Iowa: Beyer and Williams, 234.
- Plattin limestone, Ordovician, Illinois: Weller, 2523.
- Pleasanton beds, Carboniferous, Kansas: Wooster, 2636.
- Pleasanton shale, Pennsylvanian, Missouri: Shepard, 2194.
- Plum Creek clay, Silurian, Kentucky: Foerste, 883, 884.
- Plum Point marls, Miocene, Maryland: Shattuck *et al.*, 2193.
- Plum Point marls, Tertiary, Maryland: Shattuck, 2185.
- Pocono formation, Carboniferous, Pennsylvania: Butts, 368; Clapp, 475, 477.
- Pocono sandstone, Lower Carboniferous, Pennsylvania: Barrell, 150.
- Pocono sandstone, Carboniferous, West Virginia: Grimsley, 1044.
- Pocono formation, Mississippian, Maryland: Clark and Mathews, 488.
- Pogonip limestone, Ordovician, California and Nevada: Ball, 120.

- Point Pleasant formation, Ordovician, Ohio and Kentucky: Bassler, 156.
- Poison Canyon formation, Cretaceous, Colorado: Darton, 648.
- Polk Bayou limestone, Ordovician, Arkansas: Purdue, 1970.
- Pomfret phyllite, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Poor Mountain zone, Cambrian?, South Carolina: Sloan, 2218.
- Portage member, Devonian, Maryland: Clark and Mathews, 488.
- Port Clarence limestone, Silurian, Alaska: Brooks, 313.
- Porters Creek clay, Cretaceous, Mississippi: Crider, 598.
- Porters Creek clay, Tertiary, Mississippi: Crider, 595; Crider and Johnson, 599.
- Porters Creek (Flatwoods) clay, Eocene, Mississippi: Logan, 1608.
- Porters Creek formation, Tertiary, Illinois: Purdy and DeWolf, 1973.
- Porters Creek formation, Tertiary, Missouri: Shepard, 2194.
- Porters Creek formation, Tertiary, Tennessee, Kentucky, and Illinois: Glenn, 971.
- Port Ewen limestone, Devonian, New York: Grabau, 991.
- Port Hudson formation, Quaternary, Mississippi: Crider, 595; Crider and Johnson, 599.
- Port Hudson formation, Quaternary, Louisiana and Arkansas: Veatch, 2436.
- Port Renfrew series, Vancouver Island: Hall, 1064.
- Potapaco member, Eocene, Maryland: Shattuck *et al.*, 2193.
- Potem formation, Jurassic, California: Diller, 721.
- Potomac formation, Cretaceous, Mississippi: Logan and Hand, 1609.
- Potomac formation, Cretaceous, South Carolina: Pugh, 1963.
- Potomac group, Cretaceous, Maryland and Delaware: Miller, 1749.
- Potomac group, Jurassic? and Cretaceous, Maryland: Shattuck *et al.*, 2193.
- Potomac group, Jurassic-Cretaceous, Maryland: Clark and Mathews, 488.
- Potosi volcanic series, Colorado: Cross *et al.*, 607.
- Potsdam sandstone, Cambrian, Illinois: Weller, 2517, 2524.
- Potsdam sandstone, Cambrian, Wisconsin: Grant, 1017; Weidman, 2512.
- Potsdam series, Cambrian, Iowa: Beyer and Williams, 234.
- Potsdam, Ordovician, Mississippi Valley: Davis, 663.
- Pottsville conglomerate, Lower Carboniferous, Pennsylvania: Barrell, 150.
- Pottsville formation, Carboniferous, Ohio: Carney, 427.
- Pottsville formation, Carboniferous, Pennsylvania: Butts, 368; Clapp, 475, 477; Woolsey, 2634.
- Pottsville formation, Carboniferous, Pennsylvania, Ohio, and West Virginia: Griswold and Munn, 1048.
- Pottsville formation, Pennsylvanian, Maryland: Clark and Mathews, 488.
- Pottsville series, Carboniferous, West Virginia: Grimsley, 1044.
- Poughquag quartzite, Connecticut: Gregory, 1034.
- Poughquag quartzite, Cambrian, Connecticut: Gregory and Robinson, 1038.
- Poughquag quartzite, Cambrian, New York: Berkey, 207.
- Poughquag quartzite, Cambro-Ordovician, Connecticut: Hobbs, 1185.
- Powers Bluff quartzite, pre-Cambrian, Wisconsin: Weidman, 2512.
- Prairie du Chien formation, Ordovician, upper Mississippi Valley: Bain, 99.
- Prairie du Chien limestone, Ordovician, Iowa: Beyer and Williams, 234.
- Prairie du Chien formation, Ordovician, Wisconsin: Grant and Burchard, 1021.
- Prattsburg shales and flags, Devonian, New York: Luther, 1634.
- Pre-Kansan, Quaternary, Iowa: Calvin, 387.
- Preston formation, Cretaceous, Arkansas: Veatch, 2436.
- Preston gabbro-diorite, Connecticut: Gregory and Robinson, 1038.
- Prichard (?) formation, pre-Cambrian, Montana: Emmons, 806.
- Prichard slate, Algonkian, Montana: Walcott, 2470.
- Prospect porphyritic gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Prospect Mountain quartzite, Cambrian?, Nevada and California: Ball, 120.
- Prosperity limestone, Carboniferous, Pennsylvania: Clapp, 475.
- Prosperity limestone, Carboniferous, Pennsylvania, Ohio, and West Virginia: Griswold and Munn, 1048.
- Prout limestone, Devonian, Ohio: Stauffer, 2277.
- Providence Cove beds, Vancouver Island: Hall, 1064.
- Puente shale, Miocene, California: Eldridge and Arnold, 779.
- Puerco, Tertiary, Wyoming: Veatch, 2439.
- Puerco marls, Eocene, New Mexico: Keyes, 1388.
- Puerco marl, Eocene, Colorado and New Mexico: Shaler, 2176.
- Puerco marls, Eocene, New Mexico: Keyes, 1390.
- Puget group, Cretaceous, Washington: Arnold, 56.
- Puget group, Tertiary, British Columbia: Brooks, 313.
- Pulliam formation, Cretaceous, Texas: Udden, 2408.
- Purgatory conglomerate, Massachusetts: Mansfield, 1674.
- Purisima formation, Tertiary, California: Arnold, 57.



- Putnam gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Putnam Hill limestone, Carboniferous, Pennsylvania: Stevenson, 2294.
- Quadrant (?) formation, Carboniferous, Montana: Emmons, 806.
- Quadrant formation, Mississippian, Montana: Rowe, 2090.
- Quartermaster formation, Permian, Texas: Gould, 986, 987.
- Quebec group, Canada: Young, 2660.
- Queen Charlotte group, Cretaceous, British Columbia: Brooks, 313.
- Quinalt formation, Tertiary, Washington: Arnold, 56.
- Quincy group, early Carboniferous, or late pre-Carboniferous: Emerson and Perry, 790.
- Racine limestone, Silurian, Wisconsin: Alden, 23.
- Rampart series, Devonian, Alaska: Brooks, 313; Prindle, 1956.
- Ramsay Lake graywacke conglomerate, pre-Cambrian, Ontario: Coleman, 539.
- Rancocas formation, Cretaceous, Maryland and Delaware: Miller, 1749.
- Raritan clay, Cretaceous, New Jersey: Weller, 2520.
- Raritan formation, Cretaceous, Maryland: Clark and Mathews, 488; Shattuck *et al.*, 2193.
- Raritan formation, Cretaceous, Maryland and Delaware: Miller, 1749.
- Raritan, Cretaceous, New York: Veatch, 2434.
- Rattlesnake beds, Cretaceous, Texas: Udden, 2409.
- Ravalli (?) formation, pre-Cambrian, Montana: Emmons, 806.
- Ravalli series, Algonkian, Montana: Walcott, 2470.
- Red Bank sand, Cretaceous, New Jersey: Weller, 2520.
- Red Beds, Permian, New Mexico: Ordóñez, 1831.
- Red Beds, Triassic?, Colorado: Darton, 648; Gale, 922.
- Red Bluff formation, Quaternary, California: Diller, 721.
- Red Bluff sandstones, Permian, Kansas: Wooster, 2636.
- Red Mountain formation (Clinton), Silurian, Alabama: Smith, 2229.
- Redstone limestone, Carboniferous, Appalachian region: Stevenson, 2295.
- Redstone limestone, Carboniferous, West Virginia: Grimsley, 1044, 1046.
- Remmel granodiorite, Jurassic, Cascade Mountains: Daly, 632.
- Reveft quartzite, Algonkian, Montana: MacDonald, 1658.
- Rhinestreet black shale, Devonian, New York: Luther, 1633, 1634.
- Rib Hill quartzite, pre-Cambrian, Wisconsin: Weidman, 2512.
- Richmond division of the Cincinnati, Ordovician, Illinois: Weller, 2517, 2524.
- Richmond limestone, Ordovician, Illinois: Weller, 2522.
- Richmond limestone and shales, Ordovician, Missouri: Bowman and Reeds, 277.
- Ripley formation, Cretaceous, Alabama: Smith, 2229.
- Ripley formation, Cretaceous, Illinois: Purdy and DeWolf, 1973.
- Ripley formation, Cretaceous, Mississippi: Crider, 595; Crider and Johnson, 599; Logan, 1608.
- Ripley formation, Cretaceous, North Carolina: Stephenson, 2281.
- Ritchie red beds, Carboniferous, Appalachian region: Stevenson, 2295.
- Riverside sandstone, Mississippian, Indiana: Reagan, 1998.
- Roan gneiss, Archean, North Carolina: Keith, 1352, 1354.
- Rochester shale, Silurian, New York: Bassler, 156; Hartnagel, 1085.
- Rockcastle, Carboniferous, Appalachian region: Stevenson, 2295.
- Rockwood (Clinton), Virginia: Eckel, 765.
- Rockwood formation, Silurian, West Virginia: Grimsley, 1044.
- Rocky Mountain quartzite, Carboniferous, Alberta: Dowling, 736.
- Rogersville limestone, Carboniferous, Appalachian region: Stevenson, 2295.
- Rogersville shale, Cambrian, Virginia: Bassler, 158.
- Rome shales, Cambrian, Georgia: Watson, 2483.
- Romney formation, Devonian, Maryland: Clark and Mathews, 488.
- Romney shale, Devonian, West Virginia: Grimsley, 1044.
- Rondout formation, Silurian, New York: Hartnagel, 1084.
- Rondout limestone, Silurian, New York: Grabau, 991.
- Rosalie granite, pre-Cambrian, Colorado: Ball, 118.
- Rosebud beds, Tertiary, South Dakota: Matthew, 1702.
- Rosendale cement rock, Silurian, New York: Grabau, 991.
- Rosiclar sandstone, Mississippian, Illinois: Weller, 2523.
- Roslyn formation, Tertiary, Washington: Smith and Calkins, 2240.
- Roubidoux sandstone, Cambro-Ordovician, Missouri: Shepard, 2194.
- Rove slates, Algonkian, Minnesota: Abbott, 1.
- Roxbury conglomerate, Carboniferous?, Massachusetts: Mansfield, 1674.
- Russell shales, Cambrian, Virginia: Bassler, 158.
- Ruth limestone, Carboniferous, Nevada: Lawson, 1526.
- Rutledge limestone, Cambrian, Virginia: Bassler, 158.
- Sabine formation, Tertiary, Arkansas and Louisiana: Veatch, 2436, 2437.



- Sabine stage, Eocene, Louisiana: Harris, 1079.
- Saddlehorse lentil, Permian, Texas: Gould, 987.
- Saginaw formation, Carboniferous, Michigan: Cooper, 575; Lane, 1516.
- St. Clair limestone, Silurian, Arkansas: Purdue, 1970.
- St. Clair marble, Silurian, Indian Territory: Taft, 2332.
- St. Croix formation, Cambrian, Iowa: Calvin, 387; Leonard, 1559.
- St. Croix sandstone, Cambrian, Iowa: Beyer and Williams, 234.
- St. Joe limestone member, Mississippian, Arkansas: Purdue, 1971.
- St. Joe marble, Carboniferous, Arkansas: Purdue, 1970.
- St. Joe member, Mississippian, Indian Territory: Taft, 2332.
- St. Lawrence formation, Cambrian, Iowa: Calvin, 387.
- St. Lawrence limestone, Cambrian, Iowa: Beyer and Williams, 234.
- St. Louis limestone, Carboniferous, Iowa: Calvin, 387.
- St. Louis limestone, Mississippian, Illinois: Bowman and Reeds, 277; Fenneman, 860; Weller, 2523.
- St. Louis limestone, Mississippian, Mississippi: Crider, 595.
- St. Louis limestone, Mississippian, Missouri: Shepard, 2194.
- St. Louis stage, Mississippian, Iowa: Beyer and Williams, 234.
- St. Mary's formation, Miocene, Maryland: Clark and Mathews, 488; Shattuck, 2185, 2188, 2191.
- St. Mary's formation, Tertiary, Virginia: Clark and Miller, 489.
- St. Peter sandstone, Cambrian, Michigan: Lane and Seaman, 1518.
- St. Peter sandstone, Cambro-Ordovician, Missouri: Shepard, 2194.
- St. Peter sandstone, Ordovician, Illinois: Weller, 2517, 2524.
- St. Peter formation, Ordovician, Iowa: Calvin, 387, 388; Leonard, 1559.
- St. Peter sandstone, Ordovician, upper Mississippi Valley: Bain, 99; Berkey, 205; Davis, 663.
- St. Peter sandstone, Ordovician, Wisconsin: Alden, 23; Grant, 1017; Grant and Burchard, 1021.
- St. Peters sandstone, Ordovician, Illinois: Bowman and Reeds, 277; Weller, 2523.
- St. Regis formation, Algonkian, Montana: MacDonald, 1658; Walcott, 2470.
- St. Stephen's limestone, Eocene, Alabama: Smith, 2229.
- St. Stephen's limestone, Tertiary, Gulf region: Smith, 2226.
- Salem limestone, Carboniferous, Indiana: Cumings and Beede, 612.
- Salem (Bedford) limestone, Mississippian, Indiana: Reagan, 1998.
- Salina formation, Silurian, New York: Hartnagel, 1085.
- Salina member, Silurian, Maryland: Clark and Mathews, 488.
- Salkhatchie marl, Miocene, South Carolina: Sloan, 2218.
- Salt Plain shales, Permian, Kansas: Wooster, 2636.
- Saltsburg sandstone, Carboniferous, Pennsylvania: Butts, 368.
- Saltzburg sandstone, Carboniferous, West Virginia: Grimsley, 1044, 1046.
- Saluda zone, Archean, South Carolina: Sloan, 2218.
- San Bruno limestone, California: Crandall, 591.
- Sandia beds, Carboniferous, New Mexico: Gordon 982,
- Sandia formation, Carboniferous, New Mexico: Keyes, 1377.
- Sandusky formation, Devonian, Ohio: Swartz, 2329.
- Sangamon, Quaternary, Iowa: Calvin, 387.
- San Juan tuff, Colorado: Cross *et al.*, 607.
- Sankaty formation, Quaternary, New York: Veatch, 2434.
- Sankaty Head beds, Pleistocene, Nantucket Island: Wilson, 2610.
- San Lorenzo, Tertiary, California: Arnold, 57.
- San Miguel beds of Eagle Pass formation, Cretaceous, Texas: Udden, 2408.
- San Pablo formation, Tertiary, California: Prindle, 1956.
- San Pedro formation, Pleistocene, California: Prindle, 1956.
- San Pedro shales, California: Crandall, 591.
- Santa Fe sands, Miocene, New Mexico: Keyes, 1388, 1390.
- Santee marl, Eocene, South Carolina: Sloan, 2218.
- Saratoga formation, Cretaceous, Arkansas: Veatch, 2436.
- Savanna formation, Carboniferous, Arkansas: Collier, 556.
- Scarborough beds of Toronto formation, Quaternary, Canada: Coleman, 547.
- Schoharie grit, Devonian, New York: Grabau, 991.
- Scotland schist, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Sea Island sands, Pleistocene, South Carolina: Sloan, 2218.
- Seekonk conglomerate, Massachusetts: Mansfield, 1674.
- Selkirk series, British Columbia: Dawson, 686.
- Sellersburg beds, Devonian, Indiana: Stauffer, 2278.
- Sellersburg limestone, Devonian, Indiana: Blatchley, 246.
- Selma chalk, Cretaceous, Alabama: Smith, 2229.
- Selma chalk, Cretaceous, Mississippi: Crider, 595, 598; Crider and Johnson, 599; Logan, 1608.

- Selma clay, Cretaceous, Tennessee: Glenn, 971.
- Sespe formation, Eocene-Oligocene, California: Arnold, 63; Eldridge and Arnold, 779.
- Sespe formation, Tertiary, California: Arnold and Anderson, 67.
- Sespe sandstone, Eocene or Oligocene, California: Arnold and Anderson, 66.
- Setters quartzite, Algonkian, Maryland: Clark and Mathews, 488.
- Seven Sisters sandstone member, Carboniferous, Kentucky: Ashley and Glenn, 77.
- Severy shales, Carboniferous, Kansas: Wooster, 2636.
- Sevier shales, Ordovician, Virginia: Bassler, 158.
- Sewickley limestone, Carboniferous, West Virginia: Grimsley, 1044, 1046.
- Sewickley sandstone, Carboniferous, Appalachian region: Stevenson, 2295.
- Sewickley sandstone, Carboniferous, West Virginia: Grimsley, 1046.
- Shady limestone, Cambrian, Tennessee: Keith, 1354.
- Shakopee formation, Ordovician, Iowa: Calvin, 387, 388.
- Shakopee formation, Ordovician, upper Mississippi Valley: Bain, 99.
- Shakopee limestone, Ordovician, Iowa: Beyer and Williams, 234.
- Shawangunk conglomerate, Silurian, New York: Hartnagel, 1084.
- Shawangunk grit, Silurian, New York: Clarke, 499; Grabau, 991.
- Shenandoah limestone, Cambro-Ordovician, Maryland: Clark and Mathews, 488.
- Shenandoah limestone, Cambro-Ordovician, Pennsylvania: Stose, 2318.
- Shenandoah limestone, Cambro-Ordovician, West Virginia: Grimsley, 1044.
- Shenandoah limestone group, Cambrian, Virginia: Bassler, 158.
- Sherburne formation, Devonian, New York: Grabau, 991.
- Sherburne flagstone member, Devonian, New York: Williams, 2583.
- Shinarump conglomerate, Triassic, Utah: Cross, 604; Lee, 1544.
- Shuswap series, British Columbia: Dawson, 686.
- Shuswap series, Archean, Yukon Territory: Brooks, 313.
- Siamo slate, pre-Cambrian, Michigan: Lane and Seaman, 1518.
- Siebert Lake beds, Pliocene, Nevada: Ball, 120.
- Sillery formation, Cambrian, Canada: Young, 2660.
- Silver Creek hydraulic limestone, Devonian, Indiana: Blatchley, 246.
- Silver Pipe limestone, Mississippian, New Mexico: Gordon, 981.
- Silver Plume granite, pre-Cambrian, Colorado: Ball, 118.
- Silver Terrace sandstone, California: Crandall, 591.
- Silverton volcanic series, Colorado: Cross *et al.*, 607.
- Similkameen granite, Tertiary, Cascade Mountains: Daly, 632.
- Sioux quartzite, pre-Cambrian, Iowa: Calvin, 387.
- Sioux quartzite, Proterozoic, Iowa: Beyer and Williams, 234.
- Skagit series, Alaska: Brooks, 313.
- Skaneateles shale, Devonian, New York: Luther, 1633.
- Skolai volcanics, Triassic, Alaska: Brooks, 313.
- Skwentna complex, Alaska: Brooks, 313.
- Smithfield limestone member, Cambrian, Rhode Island: Emerson and Perry, 790.
- Smith River beds, Tertiary, Montana: Rowe, 2090.
- Snoqualmie granodiorite, Tertiary, Washington: Smith and Calkins, 2240.
- Snowbird formation, Cambrian, Tennessee: Keith, 1354.
- Socorran series, Carboniferous, New Mexico: Keyes, 1377.
- Sodus shale, Silurian, New York: Clarke, 494; Hartnagel, 1085.
- Soudan formation, Archean, Minnesota: Abbott, 1.
- Southgate member, Ordovician, Ohio and Kentucky: Bassler, 156.
- Spadra shale, Carboniferous, Arkansas: Collier, 556.
- Spearfish formation, Triassic, Wyoming: Darton and O'Harra, 656.
- Spergen limestone, Mississippian, Illinois: Fenneman, 860; Weller, 2523.
- Spergen limestone, Mississippian, Missouri: Shepard, 2194.
- Spergen Hill limestone, Mississippian, Illinois: Bowman and Reeds, 277.
- Spokane formation, Algonkian, Montana: Barrell, 149.
- Spokane shale, Algonkian, Montana: Rowe, 2090.
- Spring Creek granite, Colorado: Graton, 1026.
- Springvale beds, Mississippian, Iowa: Beyer and Williams, 234.
- Square Lake limestone, Devonian, New York: Grabau, 991.
- Stafford limestone, Devonian, New York: Luther, 1633.
- Standish shales, Devonian, New York: Luther, 1634.
- Stanton limestone, Carboniferous, Kansas: Beede and Rogers, 181; Wooster, 2636.
- State Quarry limestone, Devonian, Iowa: Beyer and Williams, 234; Calvin, 387.
- Stennett limestone, Pennsylvanian, Iowa: Beyer and Williams, 234.
- Sterling granite-gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Stockbridge dolomite, Cambro-Ordovician, Connecticut: Hobbs, 1185.
- Stockbridge limestone, Connecticut: Gregory, 1034.

- Stockbridge limestone, Cambro-Ordovician, Connecticut: Gregory and Robinson, 1038.
- Stockton limestone, Carboniferous, West Virginia: Grimsley, 1044.
- Stones River formation, Ordovician, Virginia: Bassler, 158.
- Stones River limestone, Ordovician, Maryland: Clark and Mathews, 488.
- Stones River limestone, Ordovician, Missouri: Bowman and Reeds, 277.
- Stones River limestone, Ordovician, Pennsylvania: Stose, 2318.
- Stony Creek granite-gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Storm King granite, pre-Cambrian, New York: Berkey, 207.
- Strawn limestone, Carboniferous, Kansas: Wooster, 2636.
- Strawn formation, Carboniferous, Texas: Ries, 2058.
- Striped Peak formation, Algonkian, Montana: Walcott, 2470.
- Strong flints, Permian, Kansas: Wooster, 2636.
- Strong City beds, Permian, Kansas: Wooster, 2636.
- Stuver series, Alaska: Brooks, 313.
- Sucarnochee clay, Eocene, Alabama: Smith, 2229.
- Sunbury or Berea shale, Mississippian, Michigan: Lane, 1516.
- Sunbury shales, Carboniferous, Michigan: Cooper, 575.
- Sundance formation, Jurassic, Wyoming: Darton, 642, 644-647; Darton and O'Hara, 656; Fisher, 873.
- Sunderland formation, Pleistocene, Maryland: Clark and Mathews, 488; Shattuck, 2184, 2185, 2188, 2191; Shattuck *et al.*, 2193.
- Sunderland formation, Quaternary, Maryland and Delaware: Miller, 1749.
- Sunderland formation, Pleistocene, Virginia: Clark and Miller, 489.
- Sunrise formation, pre-Jurassic?, Alaska: Paige and Knopf, 1862.
- Sunrise series, Paleozoic?, Alaska: Moffit, 1762.
- Suslota limestone, Carboniferous, Alaska: Brooks, 313.
- Swanton marble, Cambrian, Vermont: Edson, 774.
- Swauk formation, Tertiary, Washington: Smith and Calkins, 2240.
- Sweetland Creek shales, Devonian, Iowa: Calvin, 387.
- Sylvania sandstone, Michigan: Nattress, 1785.
- Talbot formation, Pleistocene, Maryland: Clark and Mathews, 488; Shattuck, 2184, 2185, 2188, 2191; Shattuck *et al.*, 2193.
- Talbot formation, Quaternary, Maryland and Delaware: Miller, 1749.
- Talbot formation, Pleistocene, Virginia: Clark and Miller, 489.
- Tallahatta buhrstone, Tertiary, Mississippi: Crider, 595; Crider and Johnson, 599.
- Tallahatta buhrstone, Eocene, Alabama: Smith, 2229.
- Tanana schists, Alaska: Brooks, 313.
- Tanenum andesite, Tertiary, Washington: Smith and Calkins, 2240.
- Tank volcanics, California: Lawson, 1528.
- Tate layer, Ordovician, Kentucky: Foerste, 884.
- Taylor marls, Cretaceous, Texas: Ries, 2058.
- Teaway basalt, Tertiary, Washington: Smith and Calkins, 2240.
- Tecovas formation, Triassic, Texas: Gould, 987.
- Tecumseh shales, Carboniferous, Kansas: Wooster, 2636.
- Tehachapi formation, California: Lawson, 1528.
- Tejon formation, Tertiary, California: Arnold, 57; Arnold and Anderson, 67.
- Telegraph Hill sandstone, California: Crandall, 591.
- Tellico sandstone, Ordovician, Tennessee: Keith, 1354.
- Telluride conglomerate, Eocene (?), Colorado: Cross *et al.*, 607.
- Ten-mile limestone, Carboniferous, Appalachian region: Stevenson, 2295.
- Ten Mile sands, Pleistocene, South Carolina: Sloan, 2218.
- Tensleep sandstone, Carboniferous, Wyoming: Darton, 642, 644-647; Fisher, 873.
- Terlingua beds, Cretaceous, Texas: Udden, 2409.
- Terrejon, Tertiary, Wyoming: Veatch, 2439.
- Thayer shales, Carboniferous, Kansas: Wooster, 2636.
- Thaynes formation, Carboniferous, Utah: Boutwell, 271.
- Thomaston granite-gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Thorofare andesite, Silurian?, Maine: Smith *et al.*, 2241.
- Three Forks shale, Devonian, Montana: Raymond, 1989.
- Tichenor limestone, Devonian, New York: Luther, 1633, 1634.
- Timpas limestone, Cretaceous, Colorado: Darton, 648; Fisher, 869.
- Tinton beds, Cretaceous, New Jersey: Weller, 2520.
- Tisbury (Manhasset) gravel, Quaternary, New York: Veatch, 2434.
- Titelna volcanics, Devonian, Alaska: Brooks, 313.
- Tok sandstone, Tertiary, Alaska: Brooks, 313.
- Tombigbee sands, Cretaceous, Mississippi: Logan and Hand, 1609.
- Tomstown limestone, Cambrian, Maryland: Clark and Mathews, 488.



- Tomstown limestone, Cambrian, Pennsylvania : Stose, 2318.
- Topatopa formation, Eocene, California : Arnold, 63 ; Eldridge and Arnold, 779.
- Topeka limestone, Carboniferous, Kansas : Wooster, 2636.
- Tordrillo series, Jurassic, Alaska : Brooks, 313.
- Tornillo clays, Cretaceous, Texas : Udden, 2409.
- Toronto formation, Quaternary, Canada : Coleman, 547.
- Torreon sandstones, Eocene, New Mexico : Keyes, 1388, 1390.
- Totsen series, Alaska : Brooks, 313.
- Townstown limestone, Cambrian, Pennsylvania : Stose, 2318.
- Trangville beds, Tertiary, Yukon Territory : Brooks, 313.
- Traverse group, Devonian, Michigan : Cooper, 575 ; Lane, 1516.
- Trenton-Galena formation, Ordovician, Illinois : Weller, 2517, 2524.
- Trenton limestone, Ordovician, Iowa : Leonard, 1559.
- Trenton limestone, Ordovician, Missouri and Illinois : Bowman and Reeds, 277.
- Trenton limestone, Ordovician, Ontario : Ellis, 788.
- Trenton limestone, Ordovician, Vermont : Edson, 774.
- Trenton shales, Ordovician, Virginia : Bassler, 158.
- Trinity sand, Cretaceous, Arkansas : Veatch, 2436.
- Trout Creek sandstone member, Cretaceous, Colorado : Fenneman and Gale, 863.
- Troutdale granite, Colorado : Underhill, 2414.
- Trout Lake conglomerate, pre-Cambrian, Ontario : Coleman, 539, 546.
- Trujillo formation, Triassic, Texas : Gould, 987.
- Tule formation, Tertiary, Texas : Gould, 986.
- Tullahoma formation, Mississippian, Mississippi : Crider, 595.
- Tully limestone, Devonian, New York : Luther, 1634 ; Williams, 2583.
- Tunnel Hill zone, Archean, South Carolina : Sloan, 2218.
- Tuscaloosa formation, Eocene, Alabama : Smith, 2229.
- Tuscaloosa formation, Cretaceous, Alabama : Smith, 2229.
- Tuscaloosa formation, Cretaceous, Gulf region : Smith, 2226, 2228.
- Tuscaloosa formation, Cretaceous, Mississippi : Crider, 595 ; Crider and Johnson, 599 ; Logan, 1608.
- Tuscaloosa clay, Cretaceous, Mississippi : Crider, 598.
- Tuscaloosa formation, Eocene, Alabama : Smith, 2229.
- Tuscan tuff, Tertiary, California : Diller, 721.
- Tuscarora formation, Silurian, Maryland : Clark and Mathews, 488.
- Tuscarora member, Ordovician, Virginia : Bassler, 158.
- Tuscumbia (St. Louis) limestone, Mississippian, Alabama : Smith, 2229.
- Tusquitee quartzite, Cambrian, North Carolina : Keith, 1352.
- Twelvemile beds, Tertiary, Alaska : Brooks, 313.
- Twentymile sandstone member, Cretaceous, Colorado : Fenneman and Gale, 863.
- Two-mile limestone, Carboniferous, West Virginia : Grimsley, 1044.
- Tyger zone, Archean, South Carolina : Sloan, 2218.
- Tyler red beds, Carboniferous, Appalachian region : Stevenson, 2295.
- Tyner formation, Ordovician, Indian Territory : Taff, 2332.
- Tyonok beds, Alaska : Brooks, 313.
- Tyrone, Ordovician, Kentucky : Miller, 1748.
- Uffington shales, Carboniferous, Pennsylvania : Stevenson, 2294.
- Uinta formation, pre-Cambrian, Utah : Weeks, 2506.
- Uinta quartzite, Utah : Emmons, 798.
- Uncompagre formation, Algonkian, Colorado : Cross *et al.*, 607.
- Unicoi formation, Cambrian, North Carolina and Tennessee : Keith, 1354.
- Uniontown limestone, Carboniferous, Appalachian region : Stevenson, 2295.
- Uniontown limestone, Carboniferous, West Virginia : Grimsley, 1044, 1046.
- Uniontown sandstone, Carboniferous, Appalachian region : Stevenson, 2295.
- Uniontown sandstone, Carboniferous, Pennsylvania : Clapp, 475.
- Upson clay, Cretaceous, Texas : Udden, 2408.
- Utica shale, Ordovician, Pennsylvania : Stose, 2318.
- Utica shale, Ordovician, Virginia : Bassler, 158.
- Valcour limestone, Ordovician, New York : Raymond, 1987.
- Valdez series, Alaska : Brooks, 313.
- Vallenar series, Devonian, Alaska : Brooks, 313 ; Kindle, 1400.
- Valleytown formation, Cambrian, North Carolina : Keith, 1352.
- Vancouver series, Triassic and Carboniferous?, British Columbia : Brooks, 313.
- Vanport limestone, Carboniferous, Pennsylvania : Butts, 368 ; Stevenson, 2294 ; Woolsey, 2634.
- Vanport limestone, Carboniferous, West Virginia : Grimsley, 1046.
- Vaqueros formation, Miocene, California : Arnold, 63 ; Arnold and Anderson, 66, 67 ; Eldridge and Arnold, 779.
- Vaqueros sandstone, Tertiary, California : Prindle, 1956.



- Vaulse zone, Archean, South Carolina : Sloan, 2218.
- Venice member of Columbus formation, Devonian : Swartz, 2329.
- Verdi beds, Mississippian, Iowa ; Beyer and Williams, 234.
- Vermilion series, Archean, Minnesota : Abbott, 1.
- Vernon shale, Silurian, New York : Hartnagel, 1085.
- Versailles bed, Ordovician, Kentucky : Foerste, 884.
- Vershire schist, Vermont : Richardson, 2037.
- Vicksburg formation, Oligocene, Mississippi : Logan, 1608.
- Vicksburg formation, Tertiary, Mississippi : Crider, 595, 598 ; Crider and Johnson, 599.
- Vicksburg limestone, Tertiary, Gulf region : Smith, 2226.
- Vicksburg formation, Tertiary, Louisiana : Veatch, 2436, 2438.
- Vilas shale, Pennsylvanian, Kansas : Schrader and Haworth, 2144 ; Wooster, 2636.
- Vinalhaven rhyolite, Silurian?, Maine : Smith *et al.*, 2241.
- Vincentown formation, Cretaceous, New Jersey : Weller, 2520.
- Virgin Valley beds, Miocene, Nevada : Merriam, 1716.
- Waccamaw marl, Miocene and Pliocene, South Carolina : Sloan, 2218.
- Waco limestone, Silurian, Kentucky : Foerste, 883, 884.
- Wadmalaw shell-marl, Pleistocene, South Carolina : Sloan, 2218.
- Waits River limestone, Ordovician, Vermont : Richardson, 2037.
- Wales series, Silurian, Alaska : Brooks, 313 ; Kindle, 1400.
- Wallace formation, Algonkian, Montana : MacDonald, 1658 ; Walcott, 2470.
- Walsingham formation, Pliocene, Bermuda Islands : Verrill, 2445.
- Wando clays, Pleistocene, South Carolina : Sloan, 2218.
- Wappinger limestone, Cambro-Silurian, New York : Berkey, 207.
- Wapsipinicon formation, Devonian, Iowa : Arey, 53 ; Calvin, 387, 388 ; Norton, 1805.
- Warley Hill marl, Eocene, South Carolina : Sloan, 2218.
- Warsaw formation, Mississippian, Illinois : Penneman, 860 ; Weller, 2523.
- Warsaw formation, Mississippian, Missouri : Shepard, 2194.
- Warsaw limestone, Mississippian, Illinois : Bowman and Reeds, 277.
- Warsaw shales, Mississippian, Iowa : Beyer and Williams, 234.
- Wasatch beds, Tertiary, Wyoming : Loomis, 1615.
- Wasatch formation, Tertiary, Wyoming : Fisher, 873 ; Veatch, 2437, 2439.
- Wasatch (?) group, Eocene, Colorado and New Mexico : Shaler, 2176.
- Wasatch group, Eocene, New Mexico : Keyes, 1390.
- Wasatch limestone, Carboniferous, Utah : Emmons, 798.
- Washington formation, Carboniferous, Appalachian region : Stevenson, 2295.
- Washington formation, Carboniferous, Pennsylvania : Clapp, 475-477 ; Stone and Clapp, 2314.
- Washington formation, Carboniferous, Pennsylvania, Ohio, and West Virginia : Griswold and Munn, 1048.
- Washington limestone, Carboniferous, West Virginia : Grimsley, 1044, 1046.
- Washington limestone, Ordovician, Vermont : Richardson, 2037.
- Washington reds, Carboniferous, Pennsylvania : Stevenson, 2294.
- Washington sandstone, Carboniferous, Appalachian region : Stevenson, 2295.
- Washington sandstone, Carboniferous, West Virginia : Grimsley, 1046.
- Washito group, Cretaceous, Arkansas : Veatch, 2436.
- Waterbury gneiss, Connecticut : Gregory, 1034 ; Gregory and Robinson, 1038.
- Watauga shale, Cambrian, Tennessee : Keith, 1354.
- Waterford slate, Vermont : Richardson, 2037.
- Waterloo quartzite, pre-Cambrian, Wisconsin : Warner, 2477.
- Waubakee formation, Silurian, Wisconsin : Alden, 23.
- Wausau graywacke, pre-Cambrian, Wisconsin : Weidman, 2512.
- Waynesboro formation, Cambrian, Pennsylvania : Stose, 2318.
- Waynesboro shale and sandstone, Cambrian, Maryland : Clark and Mathews, 488.
- Waynesburg limestone, Carboniferous, West Virginia : Grimsley, 1044.
- Waynesburg limestone, Carboniferous, Appalachian region : Stevenson, 2295.
- Waynesburg limestone, Carboniferous, Pennsylvania : Clapp, 475.
- Waynesburg limestone, Carboniferous, West Virginia : Grimsley, 1046.
- Waynesburg sandstone, Carboniferous, Appalachian region : Stevenson, 2295.
- Waynesburg sandstone, Carboniferous, Pennsylvania : Clapp, 475, 476.
- Waynesburg sandstone, Carboniferous, Pennsylvania, Ohio, and West Virginia : Griswold and Munn, 1048.
- Waynesville sandstone, Carboniferous, West Virginia : Grimsley, 1046.
- Weber conglomerate, Carboniferous, California and Nevada : Ball, 120.
- Weber formation, Carboniferous, Utah : Weeks, 2506.

- Weber quartzite, Carboniferous, Utah: Boutwell, 271.
- Weber quartzite, Ordovician, Utah: Emmons, 798.
- Wedington sandstone member, Mississippian, Arkansas: Purdue, 1971.
- Weisner quartzite, Cambrian, Georgia: Watson, 2483.
- Weisner sandstone, Cambrian, Alabama: Smith, 2229.
- Weitchpec schists, California: Hershey, 1133.
- Wellesley formation, Devonian, Alaska: Brooks, 313.
- Wellington beds, Permian, Kansas: Wooster, 2636.
- Wellsburg sandstone member, Devonian, New York: Williams, 2583.
- Wenonah sand, Cretaceous, New Jersey: Weller 2520.
- Westerly granite, Connecticut: Gregory, 1034.
- Westerville limestone, Pennsylvanian, Iowa: Beyer and Williams, 234.
- West Hill flags and shales, Devonian, New York: Luther, 1634.
- West River shale, Devonian, New York: Luther, 1633, 1634.
- Weverton formation, Cambrian, Maryland: Clark and Mathews, 488.
- Weverton sandstone, Cambrian, Pennsylvania: Stose, 2318.
- Wewe shales, pre-Cambrian, Michigan: Lane and Seaman, 1518.
- Wheeling, Carboniferous, Appalachian region: Stevenson, 2295.
- White Pine shale, Devonian, Nevada: Lawson, 1526.
- Whiteside granite, Post-Cambrian?, North Carolina and South Carolina: Keith, 1353.
- Whitsett limestone lentil, Cretaceous, Oregon: Diller, 724.
- Wichita conglomerate, Permian, Texas: Case, 443.
- Wichita division of the Red Beds, Permian, Texas: Case, 443.
- Wicomico formation, Pleistocene, Maryland: Clark and Mathews, 488; Shattuck, 2184, 2185, 2188, 2191; Shattuck *et al.*, 2193.
- Wicomico formation, Quaternary, Maryland, and Delaware: Miller, 1749.
- Wicomico formation, Pleistocene, Virginia: Clark and Miller, 489.
- Wilbur limestone, Silurian, New York: Grabau, 991.
- Wilcox formation, Eocene, Mississippi: Brown, 326; Logan, 1608.
- Wilcox formation, Tertiary, Mississippi: Crider, 595; Crider and Johnson, 599.
- Williamson shale, Silurian, New York: Clarke, 494; Hartnagel, 1085.
- Willimantic gneiss, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Wills Point clays, Tertiary, Texas: Fenneman, 958; Ries, 2058.
- Wilmore, Ordovician, Kentucky: Miller, 1748.
- Wilson formation, Pennsylvanian, Kansas: Schrader and Haworth, 2144.
- Winchester, Ordovician, Kentucky: Miller, 1748.
- Windy Gap limestone, Carboniferous, Appalachian region: Stevenson, 2295.
- Windy Gap limestone, Carboniferous, West Virginia: Grimsley, 1044.
- Windy Gap limestone, Carboniferous, Pennsylvania: Clapp, 476.
- Winooski or Swanton marble, Cambrian, Vermont: Edson, 774.
- Winslow formation, Carboniferous, Indian Territory: Taff, 2332.
- Winslow formation, Pennsylvanian, Arkansas: Purdue, 1971.
- Winterset limestone, Pennsylvanian, Iowa: Beyer and Williams, 234.
- Wisconsin drift, Pleistocene, Iowa: Calvin, 387; Macbride, 1639; Williams, 2588.
- Wisconsin epoch, Quaternary, New York: Veatch, 2434.
- Wisconsin deposits, Quaternary, Pennsylvania: Woolsey, 2634.
- Wise formation, Carboniferous, Virginia: Stone, 2311.
- Wissahickon phyllites and gneiss, Algonkian, Maryland: Clark and Mathews, 488.
- Wolcott limestone, Silurian, New York: Clarke, 494; Hartnagel, 1085.
- Wolsey shale, Cambrian, Montana: Emmons, 806.
- Wolverine sandstone, Algonkian, Michigan: Lane, 1509.
- Wolverine sandstone, Michigan: Lane, 1507.
- Womack gneiss, Colorado: Graton, 1026.
- Woodbine formation, Cretaceous, Arkansas: Veatch, 2436.
- Woodbine formation, Cretaceous, Texas: Ries, 2058.
- Woodbury clay, Cretaceous, New Jersey: Weller, 2520.
- Woodside shale, Carboniferous, Utah: Boutwell, 271.
- Woodstock member, Eocene, Maryland: Shattuck *et al.*, 2193.
- Woodstock quartz schist, Connecticut: Gregory, 1034; Gregory and Robinson, 1038.
- Woonsocket conglomerate, Massachusetts: Mansfield, 1674.
- Wrangell lavas, Tertiary, Alaska: Brooks, 313.
- Wreford limestone, Permian, Kansas: Wooster, 2636.
- Wyoming conglomerate, Tertiary, Wyoming: Sinclair, 2214; Veatch, 2437.
- Yakima basalt, Tertiary, Washington: Smith and Calkins, 2240.
- Yakutat series, Alaska: Blackwelder, 240; Tarr, 2346; Tarr and Martin, 2356.

- Yarmouth, Quaternary, Iowa : Calvin, 387.  
 Yegua clays, Eocene, Texas : Penhallow, 1899.  
 Yegua clays, Tertiary, Texas : Fenneman, 859; Ries, 2058.  
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 Yellville formation, Ordovician, Indian Territory : Taff, 2332.  
 Yogo limestone, Devono-Silurian, Montana : Emmons, 806.  
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- Abriachanite, 1779.  
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